# A New Look at Market Tier and Ranking Systems

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NAIOP, the Commercial Real Estate Development Association, is the leading organization for developers, owners and related professionals in office, industrial, retail and mixed-use real estate. NAIOP comprises some 20,000 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit naiop.org.

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide information about how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. The initial funding for the Research Foundation was underwritten by NAIOP and its Founding Governors with an endowment established to support future research. For more information, visit naiop.org/research.

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## Disclaimer

This project is intended to provide information and insights to industry practitioners and does not constitute advice or recommendations. NAIOP disclaims any liability for actions taken as a result of this project and its findings.

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# Executive Summary

It is common for commercial real estate professionals to divide U.S. cities and markets into ranked tiers to identify metropolitan regions with the best investment opportunities. Market tier and ranking models are widely used, particularly in the context of market research and investment due diligence. However, there is no uniform approach to creating these models. They often contain different labels and categorize individual cities differently from model to model. In addition, different models may be designed for users who have different goals and definitions of the "best" opportunities. Differences between models can lead to confusion in the marketplace as real estate practitioners sift through competing reports on which markets are considered ideal for investment or evaluate competing claims about whether an individual property is located in a "secondary market," an "18-hour city," a "treasury ripe for discovery,"[1] or some other novel category for a metropolitan market.

While practitioners can be confident in these models, proper usage still requires an understanding of how each model is constructed and whether it meets specific needs. The NAIOP Research Foundation commissioned this study to provide insight into how market tier and ranking models are currently developed and used to track, differentiate between or select markets for due diligence and possible investment. The report equips developers, investors, brokers and other real estate professionals to make an informed decision about whether and how best to make use of available models. It also explores the potential to improve on existing models through new methodological approaches and by examining novel data sources.

The authors of this report interviewed industry and academic experts, and conducted a simplified quantitative analysis of metropolitan markets. Interviews provided information on the histories, methodologies, uses and risks of existing tier models, as well as their measurable performance over time. Models tend to diverge over whether to emphasize more durable market characteristics (such as size, historical growth rates, valuation and diversity of investors active in the market) or more cyclical patterns (such as rapid growth in prices and number of transactions). Differences between industry models and disagreements about which markets belong in which tier appear to result from specialization (for specific product types and investment strategies) and adaptation to new sources of information, not methodological weaknesses or incentives to deliver predetermined results.

There may never be one "magic bullet" solution among the specialized ways in which markets are grouped and ranked, but the next step may be away from one-dimensional ranking and toward a two-dimensional comparison of a market's size and depth to its dynamism and cyclicality.

## Key Findings

- Market tiers, groupings and rankings do not arrive at the same result consistently because specialization drives adaptation. Identifying which markets are in a "top tier" for specific criteria is different than identifying which markets are in an absolute "top tier."
- Individual market-tier models are designed for varying audiences, such as the general public, corporate leaders, industry insiders or specific clients with specialized needs. The subsequent reports and results vary accordingly.
- Variable selection is a key determinant of outcomes and is shaped by a model's objectives. Measurements of market size, reliability and renown produce different "top tier" markets than measurements of volatility, yield and cyclical opportunity.
- There is likely value in transitioning from one-dimensional rankings (primary, secondary, tertiary) to an approach similar to the Morningstar Style Box that makes a two-dimensional comparison of a market's size to its potential risk and return. The Further Research section of this report provides an initial outline of what such a model might look like.

Rankings either try to describe why investors are choosing certain markets or try to identify which markets meet an investor's pre-formed objectives. Practitioners begin with a specific audience in mind and choose their methods accordingly.

# Introduction

The commercial real estate industry has long grouped cities and markets into ranked tiers. Different models use different labels to describe these rankings, such as "Primary Markets," "Global Cities," "First-Tier Markets" and "24-hour Cities." While most reports place a familiar set of large, well-known markets in the primary group, they seldom agree on the same group composition, ranking within groups, or ranking of the groups. A 2016 article by Jeanette Rice in CBRE's *Capital Watch* titled "Primary, Secondary Markets: Definitions as Clear as Mud"[2] highlights the large degree of ambiguity in the definitions and qualifications for each group.

Some practitioners argue that a quantitative, scientific and objective standardized approach should deliver the same repeatable results. If that is true, then insufficiently rigorous methods, undefinable "fuzzy" terms and/or deliberate manipulation of results could explain variations between reports.

After surveying a broad spectrum of practitioners from full-service firms, academia and research/consulting practices, the authors conclude that differences between models and methodologies stem from a core unresolvable problem: the largest, most reliable markets are rarely the most active and dynamic. Any effort to squeeze a two-dimensional problem into a one-dimensional ranking system is swayed by subjective reasoning. Should size and reliability variables carry more weight, or do dynamic but cyclical growth and activity define the "best" or "top" markets?

Four common types of reports fit under the general umbrella of tiers and rankings. First, public reports for a general audience describe which markets currently receive the most investment and are most likely to continue to do so. Authors of these reports seek to display their market knowledge and thought leadership. Second are public reports for an industry niche, usually subdivided by property type, investor location and/or investor requirements. For example, domestic investors in multifamily space want different information than global investors interested in technology hubs. Third are publicly available academic studies. These are more quantitative and written with knowledgeable industry practitioners and academics in mind. These studies often identify new variables or relationships that practitioners might add to their research. Finally, there are privately produced custom studies that advise specific investors where to look for assets that meet their needs.

Most practitioners are driven by client requests and client needs. Investors generally know which products they are interested in, such as office or industrial properties of a certain minimum size or price, and prefer markets with which they are familiar. That desire for market familiarity drives the circular logic underpinning most tier models. Rankings either try to describe why investors are choosing certain markets or try to identify which markets meet an investor's preformed objectives. Practitioners begin with a specific audience in mind and choose their methods accordingly.

**Figure 1: A Comparison of Primary Tier Assignment from Selected Reports**

| Report One | Report Two | Report Three | Report Four | Report Five | Report Six | Report Seven |
|---|---|---|---|---|---|---|
| Boston | Anaheim Santa Ana Irvine | Dallas | New York | Atlanta | San Francisco | New York |
| Chicago | Atlanta Sandy Springs Roswell | New York | Chicago | Boston | Los Angeles | San Francisco |
| Oakland | Austin Round Rock | San Francisco | Washington, DC | Chicago | Miami | Boston |
| San Francisco | Baltimore Columbia Towson | Riverside San Bernadino | Boston | Dallas | New York | Los Angeles |
| San Jose | Boston | Austin | Miami | Houston | | Austin |
| Fairfield County, CT | Chicago Naperville Elgin | Orlando | San Francisco | Los Angeles | | Seattle |
| Northern New Jersey | Dallas Fort Worth Arlington | | Las Vegas | New York | | |
| Inland Empire | Denver Aurora Lakewood | | | Philadelphia | | |

The result is that adaptation and customization, not fundamental differences, cause variation among the papers, reports and rankings. There is significant overlap among markets that are categorized as primary and secondary across most reports and rankings, particularly within individual product type categories. However, there is debate at the margins, where a few markets may be borderline cases or merit special attention. These differences reflect ongoing interest and healthy discussion.

In this report, the authors review variations among current papers, reports and rankings used to develop market tiers and similar methods of categorization. There is good reason to separate markets into groups that are similar to each other. Different groups of markets do behave differently from each other. Categorizing markets provides insight into capital flows and gives investors actionable advice.

Additionally, the authors surveyed most of the authors of these reports in June and July 2019 to include self-reported descriptions of their goals, methods and judgment calls in our review of how markets are assigned to tiers. Most respondents work for large, full-service firms such as CBRE, JLL, Savills and Marcus & Millichap. Others conduct research and analysis in academia or private consulting.

The authors then performed a limited analysis of quantitative variables. It shows that the same "primary" markets tend to rise to the top most of the time, but never with perfect consistency (Figure 1). To make classification decisions, practitioners must exercise judgment, whether by directly manipulating their final groupings (qualitatively) or by changing variables and weightings until they have their desired final groupings (quantitatively).

Finally, the authors discuss conclusions about the current state of the subject. They submit preliminary suggestions for improving on current methods for evaluating and comparing local real estate markets, including a two-dimensional chart structure in the mode of the Morningstar Style Box that still leaves room for customization and adaptation.


# Literature Review

A review of recent academic and industry publications that include tiers, groupings and rankings shows that authors are finding and testing more novel, experimental variables. This reflects the ongoing importance of the topic and its evolving role in commercial real estate.

In a 2017 *Real Estate Finance Journal* article, Joshua Harris, PhD, examined CoStar data on pricing, capitalization rates and transaction volumes over a ten-year horizon. His work illustrates that Class B multifamily properties in some tertiary markets perform as well or better than Tier 1 comparables when measured by yields (capitalization rates). He also found that while primary-market assets may appreciate faster than tertiary-market assets, those primary markets are not significantly more liquid than even Class B properties in tertiary markets.[3]

Sam Chandan, PhD, of Chandan Economics conducted a rigorous economic analysis for NAIOP in 2013. He found that primary markets have longer boom periods, higher price peaks and faster recoveries than other markets. Primary markets thus provide investors with longer time periods in which to sell assets at profitable prices, while non-primary markets increase the risk that investors will be unable to capture price appreciation when buyers disappear at the end of a shorter boom cycle.[4]

Hugh Kelly, PhD, principal at Hugh Kelly Real Estate Economics, and Emil Malizia, PhD, professor at the University of North Carolina at Chapel Hill, have conducted extensive research over several years that seeks to turn subjective definitions of tier cities into quantifiable measures. In their assessment of "24-hour" and "18-hour" cities, Kelly and Malizia studied the office and multifamily property sectors in forty-two large cities and divided them into six 24-hour cities, nine 18-hour cities and twenty-seven 9-to-5 cities. They examined six variables and combined them into a weighted index. Notable variables included the number of full-service drugstores open 24 hours; city population density; regional distinctiveness on the Markusen-Schrock (2006) scale; FBI-published crime rates per 100,000 population; percentage of workers commuting without cars; and the number of people living and working within the downtown area (a proxy measure of diversity).

Kelly and Malizia examined total returns from 1987 to 2016 and created an index of cumulative returns using Q1 1987 as a benchmark. They concluded that real property performance, particularly for office, was better in 24-hour and 18-hour cities due to positive externalities associated with walkability, diversity and density. Kelly and Malizia argue that these externalities are now priced into investment analyses by National Council of Real Estate Investment Fiduciaries (NCREIF) investors.[5]

Compelling research conducted by GWL Realty Advisors in Fall 2018 examined the resiliency of U.S. labor markets during two distinct recessionary periods—2000-2003 and 2008-2010. The authors reviewed Bureau of Labor Statistics employment data by comparing long-term job growth in selected markets to total job losses during the two periods. The highest recovery-to-loss ratio markets were Washington, DC, San Antonio, Austin, Houston and Raleigh (of these, only DC is widely considered a Tier 1 market). The remainder of the top ten was comprised of only one other popular Tier 1 market, Dallas-Fort Worth, and several "secondary" markets—Nashville, New Orleans, Indianapolis and Orlando.[6]

Cushman & Wakefield focused on the correlation between job growth and new-product absorption in its 2019 report "A Tale of 35 MSAs." It divided markets into those significantly exceeding the national average job growth rates, those somewhat exceeding them and those that performed at or below average.[7]

Urban Land Institute (ULI) has long evaluated regional real estate market trends, and its shifting approach to market-tier rankings reflects how analysts are rethinking current methods. A survey of 1,500 real estate professionals for ULI's 2016 Emerging Trends report showed that a consensus of respondents believe that Tier 1 (or Gateway/24-hour) markets were losing their appeal and that Tier 2, 18-hour markets were the ones to monitor in the future.[8] More recently, survey participants in ULI's 2018 Emerging Trends indicated that they were looking at submarkets adjacent to Gateway markets, as well as secondary markets. In fact, of the top twenty markets identified in the survey, fourteen were secondary markets, four were adjacent to primary markets, and only two were primary markets.[9] Even though the label "secondary" implies alternative options, these markets are attracting more attention than the primary group at the peak of this current growth cycle.

ULI made significant changes to its Emerging Trends Report for the 2020 edition, most visibly moving away from ranked primary, secondary and tertiary tiers toward more qualitatively descriptive names. ULI also added a local factor to identify compelling opportunities in smaller markets that may have been overlooked by the previous approach. This decision was based on feedback from developers, brokers and advisors who had identified dynamic trends in smaller markets, and from development officials and local chambers of commerce who objected to their metropolitan areas being labeled "tertiary" or "other." For these reasons, ULI has begun using descriptive names to group markets by similar size, development activity and capital flows.[10]

# Models and Variables

Grouping and ranking cities and markets is a widespread method to organize complex information into manageable categories and compare local investment returns and liquidity. Survey respondents identified the main reasons for developing these reports as mitigating risk to investors and clients; understanding which cities behave in similar or different ways (and why); and keeping abreast of markets that are witnessing increasing activity.

Definitions blur when discussions try to frame the wide variations under the umbrella of market tiers and rankings as a single, monolithic method with a single, correct approach. Sometimes market tier models are created to understand which markets have been the highest performers over the past business cycle or two. Sometimes they are used to identify which markets have the highest potential for rapid growth within a certain property type and/or investment class. Sometimes they are used to identify where the underlying employment and population growth that drives commercial real estate value has occurred and/or is most likely to continue into the near future.

Respondents generally concur that the needs and goals of clients and investors strongly shape methods and results. Those focused on industrial properties see different "top" markets than those focused on multifamily properties. Those interested in understanding and describing capital flows see more cyclical fluctuations around "hot" markets than those whose clients want to focus on markets that are most familiar to global investors. A segment of investor groups ranging from foreign investors to large pension funds focuses on the largest, most familiar markets (typically the big coastal markets and Chicago). Private and opportunistic investors such as Sam Zell can take risks in smaller or less familiar markets (such as Nashville, Austin, Denver and Columbus, Ohio).


Several practitioners noted in our survey that they have used ranking systems for many years, including multiple, slightly different models for various property types. Most early versions of these models focused on variables related to size (e.g., population, total real estate inventory, total transaction volume, estimated jobs). They have since evolved through the addition of other variables from a range of data sources. These may include capitalization rates, price fluctuations, yields and liquidity, as well as novel big data sources such as iPhone adoption or listings of businesses that operate 24 hours a day. Increasing variety has accompanied this evolution, as each organization's practitioners explore ways to develop an edge over the competition.

It is most common for models to sort markets into three groups. The first group is often labeled as Tier 1, primary, 24-hour or global cities. These markets are generally the largest, priciest and most actively traded. The second group is commonly referred to as Tier 2, secondary, 18-hour cities or late bloomers. These markets tend to be smaller but growing at an accelerated pace, with new construction, high absorption, and strong job and population growth. The third group is usually the remaining markets included in the model.

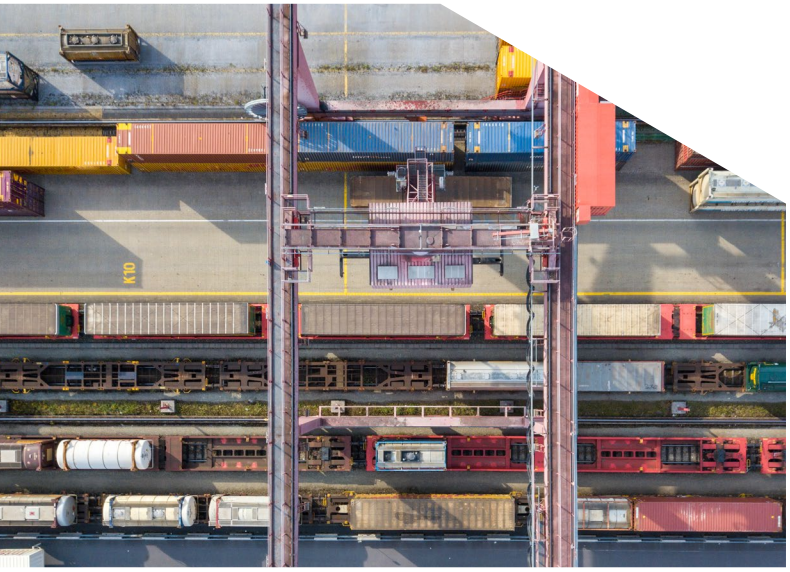
This system of groupings generally involves a trial-and-error approach, in which the practitioner selects and weights several variables until the model groups look as the practitioner expects they should. Adding more variables (such as those generated by big data) and/or reweighting the combination gets the model just a bit closer.

For example, starting only with population size, Detroit is in the top 20 metropolitan areas. But it is widely regarded as a lesser market due to low prices, declining market activity and sluggish regional economic growth. For these reasons, practitioners either qualitatively move Detroit to the second tier or add a new variable (e.g., market activity) that quantitatively moves it to the second tier. This process repeats itself as quantitative models become increasingly complicated. Each practitioner uses a slightly different methodology, causing models to diverge from each other, but they almost all adjust their models to approach the same result: a group of markets everyone recognizes to be the primary ones, which are the largest, most stable and most liquid.

More complex models can have their downsides, however. The more variables baked into tier definitions, the less useful a model becomes for evaluating the collective performance of the tiers. Similarly, the more complex the process for defining tiers, the less they tell end users about the individual markets in each tier.

There are patterns in how the variables that survey participants use have changed over time, including a trend away from size-related variables toward performance-oriented variables that correlate pricing and risk. Capitalization rates (a relative measure of price) have been the most popular addition; they may soon overtake size as the most important metric for sorting markets into tiers. However, because pricing can experience rapid cyclical fluctuations over the short term, placing greater emphasis on price changes would cause markets to move up or down tiers more frequently. Larger markets like Chicago and Dallas often fall into the Tier 2 category because their pricing is more in line with medium-sized or smaller markets.

Variables describing liquidity are also popular among respondents, but qualifiers for those variables provoke more discussion. In most cases, liquidity is defined as the degree to which an asset can be disposed of quickly, and it is primarily determined by the number of active buyers and sellers in the same market. Liquidity is typically measured by the volume of transactions in a defined time period, or by transacted space or value as a proportion of total inventory. In large markets, liquidity measurements are frequently divided into tranches by size or volume. However, this can become problematic if most transactions in a given market are smaller in size or if there is a very small number of transactions (e.g., Vancouver, British Columbia). Market liquidity is generally proportionate to market size: a market gets "hot" when the number of transactions (accompanied by rising prices) exceeds what would be proportionate to its size.



By contrast, variables measuring volatility and cyclicality are not typically included in the models the authors reviewed. Only one of the interviewees indicated that their models included data generated from forecasting future trends.

Some respondents raised the topic of adding an analysis of submarkets or nodes to models that examine metropolitan markets. This becomes especially important when Tier 1 markets become overly competitive and overpriced. A granular approach to markets can also be important when there are significant but smaller markets outlying a major market. For example, one respondent said that their firm considers the Inland Empire in Southern California a primary industrial market due to its proximity to Los Angeles, because there are fewer and smaller industrial zones central to Los Angeles itself. These market definitions can vary from one firm to another.

Practitioners also frequently add qualitative variables to their models. These include sentiment, which can influence behavior and increase the need to conduct due diligence. Some firms also monitor external factors and the activity of market leaders. Analysts of industrial real estate noted that they track large users like Amazon, UPS and FedEx for their market preferences and to identify "hot" markets. They also keep an eye on economic development and infrastructure improvements, such as the intermodal rail yard under construction in Salt Lake City and the CSX intermodal facility being built between Orlando and Tampa. As one seasoned expert noted, "quantitative algorithms need to be supplemented by on-the-ground observation and good judgment."

## Prescriptive vs. Descriptive Approaches

The authors found that models generally fall into two categories: descriptive and prescriptive. Descriptive models seek to understand which markets are attracting investment, while prescriptive models seek to identify which markets specific types of investors should prioritize for future investment.

Descriptive approaches work by sorting markets into groups and then investigating differences between those groups. Group definitions can be created quantitatively or qualitatively, but they are usually a combination of both. Measurements generally begin with size, such as inventory, population or transaction volume. Qualitative requirements include Asian and European investor market knowledge, or what is making the news in venture capital. Reports from Savills and PGIM generally fall into this category.

Adjusting descriptive models by changing variables or updating market data can lead practitioners to recategorize a handful of markets across tiers. Tier 1 is usually stable, but movement between Tiers 2 and 3 tends to be more volatile. Another perspective comes from an unnamed firm that does not change variables over time. They believe this approach allows for longitudinal and comparative analysis.

CoStar provides clients with a model and variables to rank markets and submarkets as they see fit. The firm does not release its own official rankings, but it does refer to certain markets as primary and secondary based on its own proprietary classification. The company also

publishes a quantitative and rank-ordered capitalization rate survey, which provides context to the more qualitative tier system.

Prescriptive models look at more dynamic, cyclical measurements. They hope to spot early signals that pricing and transaction volume are about to change. These can come from CRE data on prices, transactions and vacancy, or demographic/economic data on migration, housing price changes or employment growth. These models seek to identify and rank the markets that are most likely to succeed. This approach is riskier because it attempts to forecast the near future instead of describing the present and recent past. Previously-mentioned reports by Joshua Harris and Sam Chandan are examples of this category.

While it does not appear to be common, some practitioners are experimenting with benchmarking. Several respondents noted that they review their results either annually or semi-annually to vet their models. One realty advisor noted that benchmarking is only meaningful and measurable if clients act on their advice and then share their results over time. Another noted that data needed to benchmark a model's performance are not always available, but their absence does not detract from a model's utility.

# Analysis

The authors conducted a limited analysis of several high-level variables commonly used in market-tier models. CoStar provided the real estate market data used in this analysis. Additional data related to size-oriented variables, such as population counts and estimated jobs by industry (using the North American Industrial Classification System or NAICS), were sourced from the U.S. Census Bureau and the Bureau of Labor Statistics.

This analysis finds that current ranking reports are generally in step with current data. Although practitioners critique others' models as subjective, qualitative or non-rigorous, it is unlikely that there is a single, clear and objective/quantitative formula to calculate the combination of size and activity that define the market tiers. While the tiers approach does generate useful information, the practitioner must be mindful about the variables and methodology used in any particular report. Each report is designed to answer a specific question for a certain audience, property type and/or investment strategy.

Following the evolution of ranking and tiering models, the analysis begins by testing some basic measurements of size using data from the U.S. Census Bureau, available for download on its Factfinder website.[11] CoStar, which supplied the real estate market data analyzed in this report, primarily uses the Census Bureau's Metropolitan Statistical Area (MSA) boundaries. In order to keep results comparable, this analysis also refers to census data at the MSA level and uses CoStar's geographic market boundaries.*

Table 1 shows which markets rank in the top ten for variables measuring market size. Although the specific rank order varies slightly, the ten largest markets are all the same whether measured by overall population, overall employment estimates or employment estimates for the subset of industries most likely to use office space. From this set, the core "primary" markets are immediately apparent: New York, Los Angeles, Chicago, Houston, Dallas, Atlanta, Boston, Philadelphia and Washington, DC. These markets are typically placed in Tier 1.

*New York's greater Tri-State Area is subdivided into New York City and into the suburban markets of Northern New Jersey, Long Island and Orange/Dutchess Counties. Northern California's Bay Area is divided between San Jose, San Francisco, East Bay and San Rafael (Marin County). Southern California is divided into Los Angeles, Orange County, Inland Empire and Oxnard (Ventura County). Because of this practice, San Francisco and San Jose do not always appear in the top ten markets when ranking by size, although they would if they were combined. Similarly, the Los Angeles market may appear larger than the New York market in certain measurements, but New York City remains significantly larger than the City of Los Angeles.

| TABLE 1 | Markets Ranked by Census Data | | | | |
|---|---|---|---|---|---|
| Market[1] | Population[2] | All Jobs[3] | Office Jobs[4] | TAMI Jobs[5] | Warehouse Jobs[6] |
| Los Angeles | 1 | 3 | 2 | 1 | 8 |
| New York | 3 | 2 | 1 | 2 | |
| Chicago | 2 | 1 | 3 | 3 | 3 |
| Dallas-Fort Worth | 4 | 4 | 5 | 9 | 2 |
| Washington, DC | 7 | 5 | 4 | 8 | |
| Boston | 10 | 8 | 6 | 6 | |
| Philadelphia | 8 | 6 | 8 | 10 | 7 |
| Houston | 5 | 7 | 10 | | 10 |
| Northern New Jersey | 6 | 9 | 7 | | 5 |
| Atlanta | 9 | 10 | 9 | | 4 |
| San Francisco | | | | 4 | |
| San Jose | | | | 5 | |
| Seattle | | | | 7 | |
| Inland Empire | | | | | 1 |
| Columbus, OH | | | | | 6 |
| Indianapolis | | | | | 9 |

*Notes: [1] Market definitions provided by CoStar, in most cases using U.S. Census MSA boundaries; [2] U.S. Census total population estimate for June 1, 2018; [3] U.S. Census County Business Patterns estimates for all NAICS codes, based on 2016 data (latest available); [4] County Business Patterns for 4-digit NAICS codes defining industries likely to use office space†; [5] County Business Patterns estimates for 4-digit NAICS codes in Tech, Advertising, Media, and Information (TAMI) categories. These are a subset of the Office Jobs category; [6] County Business Patterns estimates for 4-digtit NAICS codes in Wholesale and Warehousing categories.*

However, there is a notable difference once the employment estimates are further filtered into the Technology, Advertising, Media and Information (TAMI) categories. Houston, Atlanta and suburban New Jersey drop out of the top ten, replaced by San Francisco, San Jose and Seattle. Interestingly, the smaller Bay Area markets are almost always placed in Tier 1, while similarly sized Seattle is sometimes placed in Tier 1 but just as often in Tier 2. This is easily explicable: the Bay Area is larger than Seattle in terms of population and jobs, and Silicon Valley both hosts and captures significantly more venture-capital flows than Seattle.

Similarly, there is a notable difference if one refers to employment estimates associated with industrial assets: wholesale and warehousing employment. Instead of the Bay Area and Seattle for technology, the Inland Empire (Riverside and San Bernardino) in California, along with Midwest hubs Columbus, Ohio, and Indianapolis, rise to the top as the largest industrial markets. This clearly demonstrates how selecting markets by property type (e.g., office vs. industrial) influences the outcomes of tier models and contributes to inconsistency among published reports.

This basic test shows that the common core markets comprising Tier 1 are still the largest markets. The practice of assigning tiers has not lost touch with reality, based on the first set of size-related data. However, adding industry-specific criteria (in this case, office or industrial) is an example of making qualitative adjustments to quantitative methods: picking and choosing among variables will move certain markets into or out of the top two tiers.

† For detailed list of industry classification as Office-Using, TAMI, and Wholesale/Warehousing, see table in Appendix.

As with the published models and reports reviewed earlier, more complications arise when specific real estate market data, such as measurements of inventories, prices and liquidity are included. Tables 2 and 3 compare the largest and most active office markets to the largest and most active industrial markets. When compared to each other, there is little consistency between them. This demonstrates how reports that specialize by product type require differentiated models, reports and definitions.

**TABLE 2** **Markets Ranked by Office Property Data**

| Market[1] | Total Inventory[2] | 12-Month Investment[3] | 12-Month Traded[4] | Weighted Liquidity[5] | Average Sale Price[6] | Average Cap Rate[7] |
|---|---|---|---|---|---|---|
| New York | 1 | 1 | 1 | 10 | 5 | 3 |
| Los Angeles | 4 | 4 | 5 | 4 | 10 | 4 |
| Washington, DC | 2 | 2 | 2 | 6 | 8 | |
| Boston | 6 | 3 | 3 | 9 | 6 | |
| San Francisco | | 6 | | | 1 | 1 |
| Seattle | 10 | 5 | 10 | | 3 | 5 |
| Atlanta | 9 | 8 | 4 | 2 | | |
| San Jose | | 7 | | | 2 | 2 |
| Chicago | 3 | | 6 | | | |
| Phoenix | | | 8 | 1 | | |
| Austin | | 10 | | | 4 | 7 |
| Philadelphia | 8 | | 7 | 7 | | |
| Denver | | 9 | 9 | 5 | | |
| Dallas-Fort Worth | 5 | | | | 7 | |
| Tampa | | | | 3 | | |
| East Bay, CA | | | | | 9 | 6 |
| Houston | 7 | | | | | |
| San Rafael, CA | | | | | | 8 |
| Charlotte | | | | 8 | | |
| Orange County, CA | | | | | | 9 |
| Miami | | | | | | 10 |

*Notes: [1] Market definitions provided by CoStar, in most cases using U.S. Census MSA boundaries; [2] Estimated total office square feet; [3] Total dollars in sales for July 2018 to June 2019; [4] Total square feet traded in same time period; [5] Liquidity is calculated as 12-month inventory sold divided by total inventory, weighted by number of transactions; [6] Average transaction price from July 2018 to June 2019; [7] Average capitalization rate for all transactions from July 2018 to June 2019. Data provided by CoStar.*

The core primary markets (first identified by size in Table 1) appear again at the top of Table 2. The first three variables (total inventory, total sales value and total sales square footage) are also related to market size. However, the remaining three variables are related to market activity and liquidity. Seattle, Denver and Austin are three markets frequently identified as bordering between Tier 1 and Tier 2. In this analysis, they each rank in the top ten U.S. markets on some variables, but not most. That is consistent with their inclusion in different tiers in different reports. Tampa, Charlotte and Orange County are often categorized as Tier 3 markets, but each has one variable in which they score in the top ten. Some survey respondents cited these markets as candidates for inclusion in Tier 2, and this quantitative analysis suggests that would be a reasonable decision.

A similar pattern emerges when reviewing market data for industrial properties, but with a different set of smaller markets.

**TABLE 3** **Markets Ranked by Industrial Property Data**

| Market[1] | Total Inventory[2] | 12-Month Investment[3] | 12-Month Traded[4] | Weighted Liquidity[5] | Average Sale Price[6] | Average Cap Rate[7] |
|---|---|---|---|---|---|---|
| Inland Empire | 6 | 3 | 3 | 6 | 10 | 3 |
| Los Angeles | 3 | 2 | 6 | 7 | | 1 |
| New York | 4 | 1 | 4 | 5 | | |
| Chicago | 1 | 4 | 1 | 2 | | |
| Atlanta | 5 | 6 | 2 | 1 | | |
| Dallas-Fort Worth | 2 | 8 | 5 | | 9 | |
| San Jose | | 5 | | 4 | | 7 |
| Philadelphia | 9 | | 8 | 8 | | |
| Boston | | 9 | | 10 | | |
| Seattle | | 7 | | | | 8 |
| Orange County, CA | | 10 | | | | 2 |
| Minneapolis | 10 | | 9 | | | |
| Houston | 7 | | | | | |
| San Francisco | | | | | | 5 |
| Phoenix | | | | 3 | | |
| East Bay, CA | | | | | | 4 |
| Wheeling, WV | | | | | 1 | |
| Longview, TX | | | | | 2 | |
| Winchester, VA | | | | | 3 | |
| Michigan City, IN | | | | | 4 | |
| Hagerstown, MD | | | | | 5 | |
| San Rafael, CA | | | | | | 9 |
| Honolulu | | | | | | 6 |
| Napa, CA | | | | | 6 | |
| Memphis | | | 7 | | | |
| Stockton, CA | | | | | 7 | |
| Detroit | 8 | | | | | |
| Laredo, TX | | | | | 8 | |
| Fort Lauderdale | | | | 9 | | |
| Cincinnati | | | 10 | | | |
| San Diego | | | | | | 10 |

*Notes: [1] Market definitions provided by CoStar, in most cases using Census MSA boundaries; [2] Estimated total square feet in tracked industrial properties; [3] Total dollars in sales for July 2018 to June 2019; [4] Total square feet traded in same time period; [5] Liquidity is calculated as 12-month inventory sold divided by total inventory, weighted by number of transactions; [6] Average transaction price from July 2018 to June 2019; [7] Average capitalization rate for all transactions from July 2018 to June 2019. Data provided by CoStar.*

**Market activity and growth are distinct from size and reliability, but grouping markets and ranking them in tiers requires squeezing these variables into a one-dimensional result. This obscures which markets are most dynamic and which are most reliable.**

As with the office markets described in Table 2, the top industrial markets in Table 3 are a collection of the largest, most commonly agreed-upon Tier 1 markets. This time, the list of smaller markets that rank highly on a single variable is even longer and more varied. For example, Phoenix, Napa and Memphis are rarely thought of as powerhouse office markets, yet they may be more interesting to industrial investors because of low capitalization rates and high average transaction prices.

Although our demonstration analysis is not as detailed as the published studies reviewed earlier in this report, it clearly illustrates one basic principle: ranking by size identifies the standard members of the Tier 1 group; ranking by activity employs judgment calls regarding which indicators to use for a given property type. When one compares the same variables for different property types, a different set of markets emerges. This makes the question of weighting and sorting variables even more complicated and adds another layer of decisions to the analysis. Should one evenly weight variables for each property type or create separate analyses with separate results?

In summary, a basic ranking analysis reveals that the general order of Tier 1, Tier 2 and Tier 3 markets is consistent with results published in other reports and studies. This mark-to-market analysis shows that the most widely referenced reports reflect reality. An analysis of variables that correlate with cyclical indicators, such as market prices, activity and/or liquidity, reveals that more complicated considerations quickly come into play.

# Conclusions

Ranking markets and grouping them into tiers continues to be a popular practice in the commercial real estate industry. While a core group of large, well-known cities are consistently placed in Tier 1, growing specialization has resulted in variation between tier models regarding which markets are included in Tiers 2 and 3. There is an inherent tension between prioritizing markets that perform consistently over multiple business cycles and emphasizing "hot" markets that sometimes experience periods of dynamic growth and high returns yet also decline more than other markets during downturns.

Based on their analysis, the authors believe that variations between reports and rankings are best explained by practitioners making judgment calls on methodology. Many markets rank highly on one or two variables; few markets rank highly on most of them. Those markets that do rank highly across many variables are also the largest markets that can be easily identified in simple size-based ranking analyses.

Some models focus on variables that change slowly over time, such as market size, average asset size and value, or regional economic growth. Other models give more weight to cyclical and dynamic variables, such as yields, liquidity and capitalization rates. The practitioner must decide which variables to include or exclude, as well as how to integrate these variables into an analytical model. Individual models, in turn, are shaped by the needs of the diverse investors and clients that practitioners seek to inform.

Each set of market tiers and rankings is useful for its specific purpose. Some analysts want to know which markets are of greatest interest to global investors. Others want to know if there are opportunities to realize additional returns in less well-known but rapidly growing regions. Given this variation, it is important for authors to clearly state the property type they are studying, which variables they emphasize and the report's intended audience. It is also important for readers to make sure that a given report is relevant to their current project, investment strategy and/or client.

Market activity and growth are distinct from size and reliability, but grouping markets and ranking them in tiers requires squeezing these variables into a one-dimensional result. This obscures which markets are most dynamic and which are most reliable. One way forward would be to create a model that provides users with a two-dimensional representation of market characteristics using axes that measure size/renown and risk/opportunity (see Further Research section).

Ultimately, commercial real estate brokers, consultants and analysts have little influence over where and when large capital flows are directed. This finding was supported by a recent Bisnow article, "'It Just Sounds Good': Why Some Investors Ignore the Data and Stick to the Priciest Markets."[12] Pricing and value respond to demand more than anything else. Where companies want to open locations, recruit employees and grow their businesses is an extremely complicated socioeconomic question, but it drives the long-term value of the assets analysts are trying to understand. Many reports try to answer specific questions around "which market now" for particular property types, investor goals, investment strategies and risk tolerances. Developers, investors and lenders should consider the reports that are most relevant to a particular project.

# Further Research

There is a clear consensus among respondents that there is still no single, superior method to group markets. During our survey, many respondents posited ideas for improving ranking models. Respondents mentioned big data and analytics, but they noted that the industry has not yet invested enough capital to fully explore their potential uses. One institutional investor found "Explainable AI" (artificial intelligence) promising, but it is in a nascent stage.

Analysts have merely scratched the surface of the non-traditional real estate and economic data sources that can be used to reliably evaluate real estate performance. A 2019 article in Medium projects that the volume of data created worldwide will hit 163 zettabytes in 2025. By comparison, the total amount of digital information created up until 2009 was half a zettabyte.[13] Regarding the current moment, all survey respondents are optimistic about more new data becoming available and useful. For example, using data from Apartments.com, CoStar has developed a model that predicts what iPhone users in New York City are willing to pay for an apartment rental based on their monthly data consumption. However, REIS Chief Economist Victor Calanog points out that users must remain mindful of the potential to overanalyze as they integrate so much new information.

As the future remains forever uncertain, opinions vary with respect to the next big markets. One respondent suggested that, if the medical industry were the darling of the future (in the way that software technology has been the darling of our era), cities like Minneapolis or Cleveland would emerge as "winners" due to the presence of behemoths like the Mayo and Cleveland clinics. A diametrically opposed opinion predicted that Minneapolis might just as easily head into decline a few years from now if the industry of the future did not align with the city's current strengths. This is true for all the "secondary" markets that could return to pre-eminence or fall into decline. This wide range of sentiment underlines the limitations of any analysis that attempts to identify the next "hot" market in advance.

## Toward a New Dimension (of Analysis)

The biggest problem with grouping and ranking in its current form is that tiers models squeeze everything down into a single dimension that ranks groups "higher" or "lower." But market size and reliability do not correlate with market activity and growth.

Moving from a single-dimensional ranking of tiers toward a two-dimensional comparison of markets' size *and* activity could potentially resolve this conundrum. The Morningstar Style Box is an example of a similar analysis for financial securities. Morningstar categorizes stocks, exchange-traded funds and mutual funds along two dimensions instead of one. Company size (small-cap, mid-cap and large-cap) is on one axis, and measures of valuation and growth on the other. Although metro-level real estate markets cannot be purchased as a portfolio, treating them as if they could might reveal significant insights.

| TABLE 4 | Sample Style Box Analysis of Commercial Real Estate Markets | | |
|---|---|---|---|
| Large | New York? | | |
| Medium | | Charlotte? | |
| Small | | | Las Vegas? |
| | Value | Core | Growth |

Table 4 is a rough approximation of this approach. The Y-axis of large, medium and small maps neatly onto market size, which has historically been the core variable of the market-tier method. However, Morningstar's X-axis values, which compare a stock's current valuation to its growth potential, are likely less useful for real estate markets than an X-axis that takes into account a regional market's susceptibility to economic downturns and its potential for growth.

Ideally, the X-axis would represent a continuum of risk vs. reward, ranging from markets that have held up through multiple recessions but grow slowly to markets that have the potential for strong growth but also major contractions. In a real estate market style box, value could be defined as price resilience or reliable liquidity during downturns. Growth could be measured by examining general population and job growth, new construction and expanding inventory, or rising average asset values. Additionally, respondents consistently indicated that exit risk (which may include the frequency and size of price drops [volatility] or the inability to find a buyer during a downturn [liquidity]) is a primary concern in making investment decisions.

As with one-dimensional tiering and ranking methods, it would remain important to be mindful of a particular style box's definition and goals, and whether it were designed for a particular property type, investment strategy or market segment.

Further research could develop a two-dimensional box model by working with industry professionals to refine the X-axis to properly take into account risk (volatility and liquidity) and return (yield, appreciation, cash flow) and to develop a useful and easy-to-understand grid. Additional future research could explore what variables are being made available by big data. That, in turn, could highlight novel indicators of market activity, growth and/or risk.

One other branch of further research could include interviewing investors, landlords, lenders and brokers who highlighted, recommended and/or invested in the secondary markets that have seen the most growth in the current business cycle: Austin, Nashville and Charlotte. Did they target these markets specifically, or were they part of a broader investment strategy that happened to include them? Were they able to perceive the opportunities in these markets ahead of time, or did they simply have luck on their side? This research would illuminate how much influence market tiering, ranking and prognosticating have on decisions made by investors.

# Appendix

Table 1 refers to industries that are designated as "Office-Using," associated with Tech, Media, Advertising and Information (TAMI) jobs, or in the Wholesale/Warehousing industries. The reference table below identifies the industries (based on the current NAICS system) assigned to each of these categories:

| NAICS Code | NAICS Description | Office-Using | TAMI | Wholesale/ Warehousing |
|---|---|---|---|---|
| 4231 | Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers | | | X |
| 4232 | Furniture and Home Furnishing Merchant Wholesalers | | | X |
| 4233 | Lumber and Other Construction Materials Merchant Wholesalers | | | X |
| 4234 | Professional and Commercial Equipment and Supplies Merchant Wholesalers | | | X |
| 4235 | Metal and Mineral | | | X |
| 4236 | Household Appliances and Electrical and Electronic Goods Merchant Wholesalers | | | X |
| 4237 | Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers | | | X |
| 4238 | Machinery, Equipment, and Supplies Merchant Wholesalers | | | X |
| 4239 | Miscellaneous Durable Goods Merchant Wholesalers | | | X |
| 4241 | Paper and Paper Product Merchant Wholesalers | | | X |
| 4242 | Drugs and Druggists' Sundries Merchant Wholesalers | | | X |
| 4243 | Apparel, Piece Goods and Notions Merchant Wholesalers | | | X |
| 4244 | Grocery and Related Product Merchant Wholesalers | | | X |
| 4245 | Farm Product Raw Material Merchant Wholesalers | | | X |
| 4246 | Chemical and Allied Products Merchant Wholesalers | | | X |
| 4247 | Petroleum and Petroleum Products Merchant Wholesalers | | | X |
| 4248 | Beer, Wine and Distilled Alcoholic Beverage Merchant Wholesalers | | | X |
| 4249 | Miscellaneous Nondurable Goods Merchant Wholesalers | | | X |
| 4251 | Wholesale Electronic Markets and Agents and Brokers | | | X |
| 4541 | Electronic Shopping and Mail-Order Houses | X | X | |
| 4931 | Warehousing and Storage | | | X |
| 5111 | Newspaper, Periodical, Book and Directory Publishers | X | X | |
| 5112 | Software Publishers | X | X | |
| 5121 | Motion Picture and Video Industries | X | X | |
| 5122 | Sound Recording Industries | X | X | |

*Continued from page 15.*

| NAICS Code | NAICS Description | Office-Using | TAMI | Wholesale/ Warehousing |
|---|---|---|---|---|
| 5182 | Data Processing, Hosting and Related Services | X | X | |
| 5191 | Other Information Services | X | X | |
| 5222 | Nondepository Credit Intermediation | X | | |
| 5223 | Activities Related to Credit Intermediation | X | | |
| 5231 | Securities and Commodity Contracts Intermediation and Brokerage | X | | |
| 5232 | Securities and Commodity Exchanges | X | | |
| 5239 | Other Financial Investment Activities | X | | |
| 5241 | Insurance Carriers | X | | |
| 5242 | Agencies, Brokerages and Other Insurance Related Activities | X | | |
| 5251 | Insurance and Employee Benefit Funds | X | | |
| 5259 | Other Investment Pools and Funds | X | | |
| 5311 | Lessors of Real Estate | X | | |
| 5312 | Offices of Real Estate Agents and Brokers | X | | |
| 5313 | Activities Related to Real Estate | X | | |
| 5331 | Lessors of Nonfinancial Intangible Assets | X | | |
| 5411 | Legal Services | X | | |
| 5412 | Accounting, Tax Preparation, Bookkeeping and Payroll Services | X | | |
| 5413 | Architectural, Engineering and Related Services | X | X | |
| 5414 | Specialized Design Services | X | | |
| 5415 | Computer Systems Design and Related Services | X | X | |
| 5416 | Management, Scientific and Technical Consulting Services | X | | |
| 5418 | Advertising, Public Relations and Related Services | X | X | |
| 5419 | Other Professional, Scientific and Technical Services | X | | |
| 5611 | Office Administrative Services | X | | |
| 5613 | Employment Services | X | | |
| 5614 | Business Support Services | X | | |
| 6117 | Educational Support Services | X | X | |
| 7113 | Promoters of Performing Arts, Sports and Similar Events | X | X | |
| 7114 | Agents and Managers for Artists, Athletes, Entertainers and Other Public Figures | X | X | |
| 8132 | Grantmaking and Giving Services | X | | |
| 8133 | Social Advocacy Organizations | X | | |
| 8134 | Civic and Social Organizations | X | | |
| 8139 | Business, Professional, Labor, Political and Similar Organizations | X | | |

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