



Foot Traffic Ahead

Ranking Walkable Urbanism
in America's Largest Metros • 2019

By Tracy Hadden Loh, PhD,
Christopher B. Leinberger, and Jordan Chafetz
THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF BUSINESS & SMART GROWTH AMERICA

Center for Real Estate and Urban Analysis

THE GEORGE WASHINGTON UNIVERSITY

LOCUS



Smart Growth America
Improving lives by improving communities



**CUSHMAN &
WAKEFIELD**

YARDI

Foot Traffic *Ahead*

Ranking Walkable Urbanism in
America's Largest Metros
2019

Table of Contents

I. EXECUTIVE SUMMARY	4
II. INTRODUCTION & METHODOLOGY	6
The Economy Coalesces in Walkable Urban Places	7
Drivable Sub-urban vs. Walkable Urban Development	8
Form Meets Function	9
Methodology	10
III. METROPOLITAN RANKINGS	12
Where the WalkUPs Are	13
Current Walkable Urbanism in the 30 Largest Metros	14
Current Ranking	15
Forward-Looking Indicators	20
Future Growth Momentum Ranking	24
IV. HOUSING IN WALKUPS	27
A Disconnect Between Supply and Demand	28
Do Suburban Residents Need WalkUPs?	29
V. SOCIAL EQUITY RANKINGS	32
WalkUPs & Social Equity	33
VI. CORRELATIONS & FINDINGS	37
Walkable Urbanism & Educational Attainment	38
Walkable Urbanism & Economic Performance	38
VII. CONCLUSIONS & FURTHER STUDY	40
VIII. APPENDICES	43
Endnotes	44
Acknowledgments	46

Executive Summary

There are 761 regionally significant, walkable urban places—hereafter referred to as WalkUPs—in the 30 largest metropolitan areas in the United States.

These WalkUPs occupy a minute portion of the total land mass of the top 30 U.S. metropolitan areas (less than one percent), but deliver outsized economic performance.

There are 761 regionally significant, walkable urban places—hereafter referred to as WalkUPs—in the 30 largest metropolitan areas in the United States. These WalkUPs occupy a minute portion of the total land mass of the top 30 U.S. metropolitan areas (less than one percent), but deliver outsized economic performance.

ECONOMIC KEY FINDINGS: OFFICE, RETAIL, & RENTAL MULTI-FAMILY

This analysis ranks the current level of walkable urbanism in the 30 largest metro areas, based on the share of office, retail, and rental multi-family occupied square footage in WalkUPs relative to the metro region as a whole. This metric includes the three major types of income-producing property in recognition of the fundamentally mixed-use nature of the most successful WalkUPs.

The metro regions with the most walkable urban real estate in the office, retail, and rental multi-family product types, as measured by occupied square footage in yearend 2018, are:

1. New York City
2. Denver
3. Boston
4. Washington, DC
5. San Francisco Bay Area
6. Chicago

The weighted rent per square foot premium for WalkUP office, retail, and multi-family product types is 75 percent over the balance of the metro inventory, nearly twice the rent in drivable sub-urban places. This rent premium for walkable urbanism has increased by 19 percentage points during the course of the cycle beginning in 2010, indicating that the premium still may not have reached its peak. From other research in select metropolitan areas, we have found that there can be a capitalization rate premium for walkable urban income-producing real estate of between 30 to 50 percent. This means that the value of a walkable urban square foot is more than that of a drivable suburban square foot. Therefore, when calculating the valuation per square foot for walkable urban income real estate, this capitalization rate premium would compound the rent premium per square foot.

Examining rent premiums by product type demonstrates that while the magnitude of premiums varies, they are universally positive:

- Walkable urban office space in WalkUPs has a 105 percent (over two times) rent per occupied square foot premium over drivable sub-urban space.
- Walkable urban retail space in WalkUPs has a 121 percent (over two times) rent per occupied square foot premium over drivable sub-urban space.
- Walkable urban rental multi-family space in WalkUPs has a 61 percent rent per occupied square foot premium over drivable sub-urban space.

In addition to ranking current 2018 levels of walkable urbanism, this analysis creates a Future Growth Momentum Index to rank probable future metropolitan WalkUP performance. The Future Growth Momentum rankings are defined by a series of indicators regarding the office, retail, and multi-family product types. These include the market share of space in WalkUPs, the rent premium for space in WalkUPs, and the percentage walkable urban space located in the suburbs of a metro area vs. the central city.

The highest ranked of the 30 largest U.S. metro areas in the Future Growth Momentum Index are:

1. Boston
2. New York City
3. Detroit
4. Washington, DC
5. Pittsburgh
6. Miami

There are some unexpected metros that rank highly for Future Growth Momentum, such as metro Detroit, Pittsburgh, and Miami. In addition, a surprising highly-ranked Future Growth Momentum metro is Los Angeles (ranked #7). Detroit and Pittsburgh have seen a fundamental redevelopment of the central city with Detroit also seeing substantial growth in its urbanizing suburbs. Miami and Los Angeles both are seeing strong center city growth plus revitalization of the late 19th century transit-served suburban WalkUPs. These suburban WalkUPs now have new rail transit investment which is spurring their growth in this real estate cycle.

The WalkUP office and rental multi-family product types in all 30 of the metro areas have had market share gains of 130 percent in this real estate cycle relative to the 2010 market share base. This means that drivable sub-urban real estate products have been losing market share to walkable urban real estate products during this economic cycle. In the case of Pittsburgh, Boston, and Denver, walkable urban product market share has been nearly or even above 100 percent of the net absorption in these two product types, meaning drivable sub-urban occupancy has added no net absorption or even lost absolute occupancy since 2010, as shown by the growing vacancies in business parks and regional malls.

In examining the Current & Future Growth Momentum Ranking, this analysis asks: are there are any metro areas where we are observing the end of sprawl? It is important to note that this analysis specifically examines office, retail, and multi-family income-producing properties, and does not include single-family homes, which are a primary driver of sprawling development. Sprawl of single-family housing has been subsidized for decades by a series of government incentives. In contrast, this analysis examines product types that are market-driven, and in several metro areas the results are promising. This analysis allows us to “call” the end of drivable sub-urban sprawl in office, retail, and rental multi-family in the Boston metro area, due to:

- High percentage of the total metro market inventory (31 percent) that is in WalkUPs;
- 99 percent of office and multi-family rental net absorption has been in WalkUPs during the 2010-2018 economic cycle;
- The Market Share Shift Index shows a gain of 2.70 times faster net absorption than the 2010 base market share;
- Rental rate premium of 83 percent (nearly double) over drivable sub-urban real estate and this rental rate premium has increased 17 percent points since 2010;
- 40 percent of the WalkUP space is in the suburbs, demonstrating that walkable urban growth has been in both the center city (City of Boston) and the increasingly urbanizing suburbs; and
- Land that comprises the WalkUPs in metro Boston is only 1.2 percent of the total land in the region.

Executive Summary

The Boston metro area serves as an example, but the results of this report demonstrate a consistent and growing demand for walkable urbanism in many metro areas. We expect to see the end of sprawl for income-producing office, retail, and rental multi-family properties in additional metro areas in the next Foot Traffic Ahead analysis. There has been substantial research showing that drivable sub-urbanism, i.e., sprawl, is and has been systematically subsidized by federal, state and local government, starting in the mid-20th century.¹ This leads to the question of whether drivable sub-urban development patterns should continue to be subsidized, especially when the commercial real estate market is increasingly demanding walkable urbanism.

ECONOMIC KEY FINDINGS: HOUSING

Housing, both for-sale and rental, represents 84 percent of the total real estate square footage in the largest 30 metro regions.

For-sale housing in the 30 largest metro WalkUPs achieves a 90 percent valuation per square foot premium, nearly twice, over the rest of the for-sale housing market in the largest 30 metros. Multi-family rental premiums in WalkUPs are 46 percent higher than drivable sub-urban rents (adding the capitalization rate premium would raise this rental valuation premium).

Suburban WalkUP premiums for rental multi-family are almost universally positive in the top 30 metros. In many of the top-performing metros, the multi-family premium is higher in the suburbs than in the center city. Unmet demand for affordable pedestrian and transit-accessible multi-family apartments in the suburbs is a major equity challenge, particularly since it is illegal to build apartments in many suburban WalkUPs.

This report indicates that the highest-ranked walkable urban metros are models for the future development patterns of many, if not most, U.S. metros. Several of the largest 30 U.S. metros consistently rank near the bottom of the Foot Traffic Ahead survey on both economic and social equity performance, such as metro Tampa, Orlando and Phoenix.

Many of these metros have an uphill climb to create walkable places due to the fact that they experienced their initial period of development later in the country's history and lack the historic urban centers or the pedestrian-scaled fabric of older U.S. metros. However, these low-ranking metros have also demonstrated an inability to change by continuing to promote drivable sub-urban development patterns in public policy and infrastructure investments, such as voting against transit investment or maintaining outdated zoning codes that mandate a certain type of development less preferred by today's market. These metros demonstrate that focusing on sprawling, drivable sub-urban development patterns reduce economic performance and social equity outcomes.

This analysis suggests that there is a potential demand for an additional 472 WalkUPs, an increase of 62 percent over the current inventory. This pent-up demand for new WalkUPs, in addition to the growth of the existing WalkUPs, would create a new economic foundation for the U.S. economy, one far more resilient than the economic foundation resulting from building drivable suburbs in the mid- to late-20th century.

KEY FINDINGS: SOCIAL EQUITY IN WALKUPS

This analysis ranks the WalkUPs in the 30 largest U.S. metros on a Social Equity Index (SEI) based on three components (housing and transportation costs for a household earning 80 percent of the area medium income (AMI), and rental/for-sale housing mix).

The metro regions with the highest social equity rankings in their WalkUPs are:

1. New York City
2. Washington, DC
3. Baltimore
4. Minneapolis-St. Paul
5. Boston
6. Philadelphia
7. Chicago
8. Cincinnati
9. Denver
10. San Francisco Bay Area

These metros appear counter-intuitive since they include six of the highest currently ranked metros in walkable urbanism, which result in substantial rent premiums. However, the reason for this outcome is that while in the most walkable urban metros the "rent is too damn high," (though it is not much lower in the least walkable urban metros), transportation costs for 80 percent AMI households are dramatically lower due to more diverse and less expensive transportation options, such as transit, biking and walking.

The highest ranked SEI metros are across the northern tier of the continental U.S. while the lowest ranked tend to be Sun Belt metros. The cost of housing for an 80 percent AMI household is too high in nearly all metros, but the cost of transportation is substantially lower in the northern tier metros. Many WalkUPs in the Sun Belt also use exclusionary zoning to prohibit rental apartments, and contain very little walkable urban legacy housing inventory built before 1930.

Even if a metro is highly ranked on SEI, there is a need for an aggressive affordable housing program in the short-term to allow lower income households to live in a WalkUP, if they so choose. The long-term solution to the high cost of housing in WalkUPs is to build more housing, make more walkable urban land available, and improve wages for working people. The real estate sector has struggled to achieve

this due to exclusionary zoning and the lack of experience of the real estate development industry in building walkable urban product in many metro areas.

The rental/for-sale housing mix metric increases a metro's ranking if their WalkUPs have a rough balance of both types of housing. However, some WalkUPs legally outlaw rental housing (therefore, 100 percent of housing is for-sale) and other WalkUPs have no owner-occupied units. Both extreme conditions lower their SEI ranking.

WalkUPs often have a much higher share of renters than their central cities and regions as a whole. Therefore, the rental/for-sale housing mix for all metros is skewed towards a higher renter population. The predilection toward a higher rental percentage in the housing mix may be, as yet unproven, a condition of walkable urbanism.

There are metros that have achieved both high economic performance at the WalkUP and metropolitan levels and have high social equity performance, demonstrating that it is possible to "do well while doing good."

KEY FINDINGS: METROPOLITAN AREA EDUCATIONAL ATTAINMENT & GDP

A metro area's current level of walkable urbanism as ranked in this research is significantly positively correlated with the educational attainment of its workforce. In the six most highly ranked walkable urban metros, 42 percent of the workforce has a college degree while in the seven lowest ranked walkable urban metros 31 percent of the workforce has a college degree, a 35 percent higher workforce education level.

A metro area's current level of walkable urbanism as ranked in this research is positively correlated with GDP per capita. The six most highly ranked walkable urban metros for current walkable urbanism have an average GDP per capita of \$74,656 and the seven lowest-ranked metros for current walkable urbanism have an average GDP per capita of \$49,156; a 52 percent GDP per capita premium for the most highly ranked walkable urban metros over the lowest ranked walkable urban metros.



INTRODUCTION AND METHODOLOGY

The Economy Coalesces in Walkable Urban Places

This research maps the geographic locations and market demand for “regionally significant” walkable urban places, referred to as “WalkUPs”, in the 30 largest U.S. metropolitan areas.

We rank each metro area from greatest to least percentage of walkable urban development by built inventory of income property (square footage of office, retail and rental multi-family real estate products). We then evaluate the economic and social performance of WalkUPs compared to the rest of the metro area using quantitative metrics. Across regions, these market indicators show WalkUPs emerging as the place to be for the knowledge-sector dominated economy.

These rankings update findings from a 2007 Brookings Institution report² and subsequent George Washington University (GWU) reports in 2014 and 2016.³ Due to methodological refinements, each of these reports represents an improvement and update to the previous report, rather than a strict series. For example, in 2016 we added rental multi-family product data and measured social equity at the regional level. In this report, our social equity metrics are now comparable in spatial precision to our economic performance measures at the place level. In addition, we have refined our regional boundary definitions to a more precise focus on the commercial real estate market, which in many metro areas is significantly smaller than the single-family housing market in land area.

Many readers may be used to thinking of the land in metropolitan areas in the U.S. as divided into three categories: “central city,” “suburban,” and “exurban.”⁴ However, emerging 21st century development patterns suggest that the exurban typology is less meaningful for where the economy focuses its location, and we need categories driven by measures of urban form and economic activity, rather than absolute or relative spatial location, to examine and understand contemporary and future metropolitan development in the United States.

The more useful dichotomy to understand metropolitan America is “walkable urban” and “drivable sub-urban” development. Both types of development can occur in either a metro’s central city or in a metro’s suburban area.



Drivable Sub-urban vs. Walkable Urban Development

During the second half of the 20th century, the now-familiar drivable sub-urban approach dominated real estate development. Drivable sub-urban includes:

- Historically low-density development (generally 0.05 to 0.4 floor area ratio or FAR);⁵
- Segregated real-estate product types (different real estate product types generally separated from one another);
- Standardized product types that, aside from superficial architecture, are similar throughout the country; and
- Cars and trucks as the predominant transportation mode.

We have come to know this form as “sprawl.” However, in reality, drivable sub-urban form can be found in the geographic heart of America’s metros and at the fringe. It is a real estate development form that was invented in the U.S. and exported throughout the world.

Most real estate developers and investors, government regulators, and financiers are intimately familiar with the drivable sub-urban model, turning it into a successful development formula, tradeable commodity, and macroeconomic driver throughout the mid- to late-20th century. In addition to real estate, this model fueled demand for automobiles, drove road construction, and boosted the finance, insurance, and oil industries. In short, this development model appeared to provide a solid foundation for the U.S. economy for the majority of the 20th century.

By the mid-1990s, the redevelopment of center cities and suburban town centers, accompanied by the New Urbanism movement, demonstrated reviving demand for walkable urbanism, the dominant development form before the early 20th century. Walkable urban development includes:

- Substantially higher densities (1.0 to 40 FAR, though mostly in the 1.0 to 4.0 range);
- Relaxed or overlay zoning, such as “form based zoning”, to allow form higher density mix of real estate products;
- Emerging “new” mixed-use product types (e.g., rental apartments over grocery store on ground floor); and
- Connected to the metro area via multiple transportation options, such as bus and rail, bicycle, walking and motor vehicles. Once in the walkable urban place, destinations such as home, work, school, stores, and restaurants are within walking distance, which is about ½ mile or a kilometer. Walking distance puts a governor on the geographic size of a WalkUP, as will be shown in this research.

As our findings demonstrate, and previous metro-level research has shown, walkable urbanism is emerging as a rising or even dominant factor in real estate development across U.S. metros.⁶ This trend is not confined to coastal cities, those with pre-WWII roots, or economic superstars. Walkable urbanism is on the rise in the Rust Belt, the Sun Belt, tech metropolises, government centers, and millennial magnets. And the trend is dramatic. In the most highly ranked walkable urban metros, 72 percent of 2010-2018 office and rental multifamily absorption by square footage is now walkable urban. Walkable urban products and WalkUPs generate substantial rental premiums, indicating a tsunami of pent up demand for walkable urban development. This research also shows that the demand for drivable sub-urbanism in certain real estate product types has been satisfied in many metro areas.

Walkable urbanism could provide a far more resilient and fruitful metro-level economic base for the 21st century economy than drivable sub-urbanism did in the mid-to late-20th century. However,

this wealth will not be built without appropriate infrastructure, zoning, and financing mechanisms at the federal, state, and local levels.

Both development forms, drivable sub-urban and walkable urban, are now available to households and companies making location choices in U.S. metropolitan areas. However, these two forms are fundamentally different, requiring different land acquisition, zoning, construction, financing, marketing, and, especially, different management, requiring “place management”. U.S. metros where the public and private sectors work together to adapt and deliver increased supply of walkable urban places will be the economic and social justice winners of the next generation.

Form Meets Function

Real estate professionals often categorize metropolitan land use into two economic functions: regionally significant or local serving.

Regionally significant locations, which the brokerage community refers to as “sub-markets,” have concentrations of employment (particularly in base/export or regional-serving businesses and jobs); and can also include civic centers, higher education facilities, major medical centers, regional retail establishments, as well as one-of-a-kind cultural, entertainment, or sports assets.⁷



Local serving locations, frequently called bedroom communities, are predominantly residential with complementary commercial development, such as grocery and drug stores; doctor, dentist, bank branches and realtor offices; and community-centric civic services, such as primary and secondary schools, and police and fire stations.

Generally speaking, metropolitan area households earn their livings in regionally significant locations, and they live their lives outside of work in local-serving places. There are of course many exceptions to this spatial division of working and living, such as the “new” trend of working from home, but it remains the dominant model.

Combining the two forms (drivable sub-urban and walkable urban) and the two functions (regionally significant and local serving) of metropolitan land use results in a simple four-cell matrix. This Form and Function Matrix, shown to the right, defines the land-use options available for any metropolitan area. This matrix includes an estimate of the percentage range of metropolitan land use for each of the four types, based upon previous GWU research at the metropolitan level.⁸

Foot Traffic Ahead 2019 focuses on the WalkUPs, which are in the upper left hand corner of the Form/Function Matrix, and contrasts the WalkUPs’ economic and social equity performance compared to the balance of the metropolitan area.

Form and Function of Metropolitan America

	REGIONALLY SIGNIFICANT	LOCAL SERVING
 WALKABLE URBAN	WALKUPS (Walkable Urban Places) 0.04-1.2% Metro Area Acreage	WALKABLE NEIGHBORHOOD 1.0-4.0% Metro Area Acreage
 DRIVABLE SUB-URBAN	DRIVABLE EDGE CITY 2.0-4.0% Metro Area Acreage	DRIVABLE SUB-DIVISION 92-95% Metro Area Acreage

Methodology

Data Sources:

Office, retail and multi-family inventory, asking rent, and vacancy data provided by **CoStar™**, the leading provider of office, retail and rental multi-family data in the United States (www.costar.com)

Housing and Transportation Affordability Index® from the **Center for Neighborhood Technology** (htaindex.cnt.org)

Walkability provided by **WalkScore®** index (www.walkscore.com)

Population, housing tenure, and educational attainment data from the **U.S. Census Bureau American Community Survey 2017** (www.census.gov)

Per Capita GDP from the **U.S. Bureau of Economic Analysis 2017** (www.bea.gov/regional)

For-sale housing automated valuation model estimates provided by **Redfin** (www.redfin.com/redfin-estimate)

Multifamily rental asking rents provided by **Yardi Matrix** (www.yardimatrix.com)

Satellite and Google Maps® and Google Earth® aeries, used to confirm walkable versus drivable environments¹³

1 DEFINING WALKUPS

This research is based upon a Brookings Institution methodology to identify WalkUPs in each of the 30 largest metros.⁹ This methodology defines the form and function of WalkUPs and creates a ranking system using two metrics: 1) real estate economic performance and 2) social equity performance.

Using the Brookings methodology as a guide, this study defines WalkUPs with the following characteristics:

- **Office & Retail Space:**
Office: more than 1.4 million square feet and/or
Retail: more than 340,000 square feet
- **Walk Score®:** 70 or greater at the most walkable intersection.¹⁰
- **Visual Screening:** The above criteria can produce “false positives” for locations that are in actuality drivable sub-urban shopping malls and lifestyle centers. To screen these false positives, we inspected a recent satellite image of every WalkUP candidate for telltale surface parking lots and removed any candidates dominated by that auto-oriented land use.

2 DEFINING REGIONS

Our study looks at the largest 30 US metropolitan areas based on the 2017 residential population of U.S. Census-designated metropolitan statistical areas (MSAs).¹¹ These regions, intended to be “an area containing a large population nucleus and adjacent communities that have a high degree of integration with that nucleus,” tend to be far larger in land area than the area containing most regionally significant commercial office space.¹² In addition, the U.S. Census does not allow MSAs to overlap, and so regions with multiple population nuclei must be divided by boundaries that are not necessarily useful from a real estate perspective.

For the purposes of this report, we have therefore contrived a simple and consistent “metro market area” definition that is centered on the core WalkUP value hypothesis we are testing in this research. For each metro area, we include in our analysis every county or county-equivalent that contains at least one WalkUP. For some metros, this means our region aligns exactly with the MSA definition. In others, such as Los Angeles, our region “borrows” counties from adjacent Census MSAs that are not in the top 30. Finally and notably, some of our regions are substantially smaller in land area than the corresponding U.S. Census MSA. For example, we have reduced the boundary of the Atlanta MSA to 3 counties where nearly all of the regionally significant economic activity locates, which excludes some far-distant exurban counties.

WHY WALK SCORE®?

There is a great deal of research interest in methodologies to quantify the concept of “walkability.” A Google Scholar search for “walkability index” returns 18,500 results, most of which are not about Walk Score®. Walk Score® has also been criticized as being overly dependent on retail amenity locations as opposed to other built environment features and quality.¹⁴ However, Walk Score® remains the only walkability metric with U.S. national coverage that is easily accessible to the general public. While it is far from perfect, it is consistent, easy to communicate, and has been validated in multiple studies as an accurate measure of walkable amenities that is positively correlated with other measures of walkability and with actual walking activity.¹⁵

DATA LIMITATIONS

It should be noted that both Foot Traffic Ahead and in-depth, metro-specific WalkUP Wake-Up Call analyses do not account for a metro area’s owner-user space. Owner-user space is generally real estate owned and occupied by a business, government institution, or nonprofit organization and its employees. Many organizations own and occupy their own real estate; examples include federal and state governments, universities and colleges, and medical centers, as well as corporate factories and offices. Owner-user space contains a large, but unknown, percentage of the real estate in any metropolitan area. Because no regional or national database of owner-occupied space exists, as much as an estimated 30 to 40 percent of employment space cannot be located, measured, and included in these analyses. This omission represents a gap in all studies of metropolitan development patterns, including this one.

3 RANKING THE METROS

The walkable urbanism rankings in the 30 largest metros are based upon the proportional amount of office, retail and rental multi-family space in WalkUPs relative to the region as a whole. We include all three major types of income property in this metric in recognition of the fundamentally mixed-use nature of the most successful regionally significant walkable urban places.

Our analysis includes both a Current Ranking and Future Growth Momentum Ranking of the top 30 metros. The Current Rankings are based upon the occupied square footage of total metro inventory of office, retail, and rental multi-family as of year-end 2018. The Future rankings are defined by the change in market share of and rent premiums for office, retail, and rental multi-family space between 2010 and 2018.

The Social Equity rankings use the Center for Neighborhood Technology’s Housing and Transportation (H+T)® Affordability Index.¹⁶ This index measures housing and transportation costs as a percent of a moderate household income (households at 80 percent area median income) based on the most recently available data released in 2017. Additionally, the Social Equity rankings incorporate the U.S. Census American Community Survey’s 2013-2017 five-year estimates of housing tenure (i.e. owner- or renter-occupied).



METROPOLITAN RANKINGS



Where the WalkUPs Are

This study identifies WalkUPs in the 30 largest U.S. metropolitan regions—and ranks them according to their current walkable urbanism.

Identifying the WalkUPs in each of the 30 largest U.S. metros yielded 761 WalkUPs (an average of 25 per metro). The number of WalkUPs within each metro area varies considerably, from 149 in the New York metro area to 2 in the Las Vegas metro area.

SMALL SIZE, BIG BENEFITS

The 30 largest Census metropolitan areas in the U.S. have a population of 150 million people—47 percent of the total U.S. population.¹⁷ While these metro areas make up a small portion of the total land area, just 7 percent of the lower 48 states in the U.S., according to the Bureau of Economic Analysis, they accounted for 56 percent of U.S. real gross domestic product (GDP) in 2017.¹⁸

WalkUPs account for just 0.17 percent of all Census metropolitan land area. Even within the more tightly-defined geographic boundaries of metropolitan commercial real estate markets used in this report, which are smaller than the Census definition, WalkUPs occupy a minute portion of the a given region's land mass. Within the top 30 metro markets, WalkUPs account for between 0.04 percent and 1.2 percent of land area. Despite their small size, WalkUPs are often the places people most associate with a metro area, defining the region's sense of place.

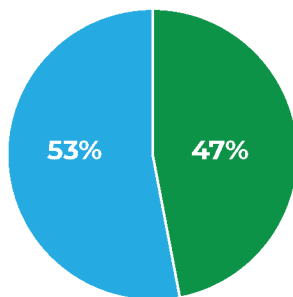
WalkUPs account for a substantially disproportionate portion of metro GRP in regions ranging from Dallas-Fort Worth to Washington, DC.¹⁹ And WalkUPs account for an even higher share of the tax revenues generated to support the local-serving land mass, which is over 95 percent of all land in these 30 metro areas (refer to the Housing section of this report). WalkUPs and other regionally significant locations generally subsidize local serving, bedroom neighborhoods in metro areas.²⁰

WalkUPs are where mixed-use, higher-density development is found, whether in downtowns, suburban town centers, innovation districts. WalkUPs have high concentrations of economic activity and jobs, as well as rental and for-sale premiums, when compared to drivable suburban locations in their metro areas. At one end of the walkable urban spectrum, metro New York City, the 2016 WalkUP Wake-Up Call analysis of the New York metro found that WalkUPs comprised only 0.5 percent of the metro's land area. At the same time, WalkUPs contributed 55.6 percent of the region's metropolitan gross regional product (GRP) and contained 38 percent of the region's real estate market value. Additionally, the New York metro area's WalkUPs had an 150 percent rental premium across product types when compared with the region's drivable sub-urban locations.²¹

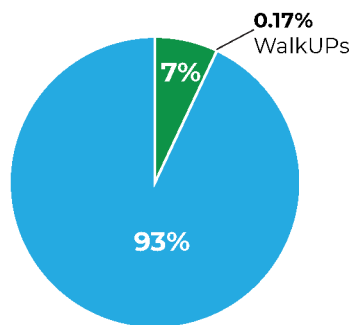
At the other end of the walkable urban spectrum, the Dallas-Fort Worth metro, a region in the Sun Belt defined by its sprawling, low-density development, WalkUPs are also disproportionately contributing to the region's economy. In the 2019 WalkUP Wake-Up Call analysis of the Dallas-Fort Worth metro area, the 38 WalkUPs comprised 0.10 percent of the metro area's land, but generated 12 percent of metropolitan GRP. Between 2010-2017, the net absorption market share of the WalkUPs in Dallas-Fort Worth was 2.6 times the 2010 basis market share—meaning that drivable suburban locations are losing market share.²²

In downtown Detroit, the 2010 move of the Rock Ventures Family of Companies, best known for its Quicken Loans subsidiary, has resulted in this one group of companies generating 1.5 percent of the GRP of the city Detroit in 2017 and an even larger 4.8 percent of the city's tax revenues. An important side issue is that the evidence strongly suggests that Quicken Loans' emergence as the number one mortgage loan originator in the country could not have happened unless it was located in a WalkUP, such as downtown Detroit.²³

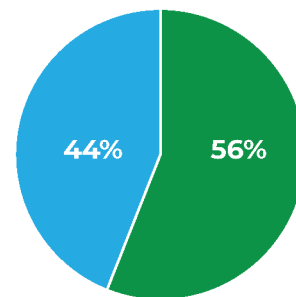
U.S. Population



U.S. Continental Land Area



U.S. Gross Domestic Product



■ Top 30 U.S. Metro Areas ■ Rest of U.S.

Current Walkable Urbanism in the 30 Largest Metros

This analysis of WalkUPs begins by ranking the current walkable urbanism of each of the largest 30 U.S. metropolitan regions, a snapshot as of end of year 2018.

This ranking is based on the current percentage of the metro area's office, retail, and rental multi-family occupied space that was located in WalkUPs. The share of occupied space in WalkUPs reflects the total inventory of these three real estate product types in each commercial metro market, which has been built up over decades of development. Therefore, each metro area's ranking is heavily influenced by many decades of development, which in all cases was overwhelmingly drivable sub-urban in character during the latter half of the 20th century.

The vast majority of existing walkable urban office, retail, and rental multi-family space in the 30 largest metros is located within central cities. In over half of the top 30 metros, less than 10 percent of WalkUP space is located in suburbs. However, in two of the top six highest ranked walkable urban metros—Boston and Washington, DC—over 40 percent of their occupied WalkUP space is located in urbanizing suburbs. The Boston and Washington, DC metro areas serve as models for future walkable urban development because the regions are capitalizing on opportunities to urbanize suburban places, as well as continuing to develop walkable places within their central cities. Economic development agencies at the metro area and local levels should focus their future efforts on development of walkable urban places in suburban areas as well as in central cities.

The question of how many WalkUPs a metropolitan area can support is important for future infrastructure and investment decisions. Examining the population per WalkUP allows us to evaluate the number of people WalkUPs can serve and the potential market in areas with fewer WalkUPs. On average, there are 273,694 people per WalkUP in the 30 largest metro areas, ranging from 83,718 people per WalkUP in the Boston metro market to 1,056,218 people per WalkUP in the Las Vegas metro market. Washington, DC is a model for walkable urban development, particularly due to its balanced development of center city and urbanizing suburbs. Using its 121,804 people per WalkUP as a benchmark, the population of the 30 largest metros could support an additional 472 WalkUPs, an increase of 62 percent over the current inventory.

Why our estimates are conservative

This report understates the economic difference between office, retail, and rental multi-family space located in walkable urban places versus drivable sub-urban areas. The limitations of existing datasets at the national level result in smaller-than-actual economic premiums for walkable urban real estate.

Our conservative assessment of WalkUP economic performance is due to two methodological factors:

1 RENT PER SQUARE FOOT IS AN IMPERFECT MEASURE OF REAL ESTATE ECONOMICS.

This analysis uses rent per square foot to demonstrate real estate economics. A more precise metric would be valuation per square foot, which is used by real estate investors to determine if an investment is viable. Valuation-per-square-foot calculations require knowledge of local capitalization rates ("cap rates") by product type. After deducting operating costs (generally 30 percent for gross rents for an office building), the cap rate is applied to determine value per square foot. To illustrate, the 2015 WalkUP Wake-Up Call: Boston analysis found a substantial cap rate premium for walkable urban space. Using Cushman & Wakefield data, WalkUP office cap rates were found to be 4.5 percent versus 6.5 percent for drivable sub-urban office (mathematically, as cap rates go down, real estate valuation goes up and vice versa). This 41 percent walkable urban cap rate premium compounds the already substantial Boston WalkUP office rental premium, valuing the true walkable urban premium significantly higher than when measured by rental rates alone.

2 RENT PRICES FOR REAL ESTATE PRODUCT OUTSIDE OF DEFINED WALKUP AREAS ARE INFLATED.

Walkable urban development takes place in regionally significant WalkUPs—which are the focus of this research—as well as in local-serving walkable neighborhoods (see table on page 9). Determining the locations and existence of local serving, walkable urban places is only possible when conducting in-depth analysis at the metro level, as in the CWU WalkUP Wake-Up Call analyses. Because local-serving walkable neighborhoods are outside the scope of this study, this report lumps their rent price data in with a metro's drivable sub-urban areas. The rental multi-family product type has had particularly substantial development in this cycle in both WalkUPs and local-serving walkable urban places. Thus, the presumable price premiums for rental multi-family space in local serving walkable neighborhoods have been combined with prices for drivable sub-urban multi-family. The result: an under-reported WalkUP price premium due to exaggerated rental multi-family rates outside of WalkUP areas.

Only by engaging in in-depth, metro-level research can these methodological issues be addressed.

WALKABLE URBANISM OF THE 30 LARGEST U.S. METROPOLITAN AREAS

Current Rankings

RANK	REGION	# OF WALKUPS	POPULATION			OFFICE, RETAIL, & RENTAL MULTI-FAMILY OCCUPIED SQUARE FEET			
			TOTAL IN METRO AREA	PER WALKUP	RANK (POPULATION PER WALKUP)	% OFFICE LOCATED IN WALKUPS	% RETAIL LOCATED IN WALKUPS	% MULTI-FAMILY LOCATED IN WALKUPS	% TOTAL LOCATED IN WALKUPS
1	New York City	149	20,192,042	135,517	6	55%	20%	34%	37%
2	Denver	19	3,115,466	163,972	8	76%	12%	25%	35%
3	Boston	57	4,771,936	83,718	1	43%	16%	29%	31%
4	Washington, DC	50	6,090,196	121,804	3	51%	17%	18%	30%
5	San Francisco Bay Area	59	6,611,717	112,063	2	43%	24%	23%	29%
6	Chicago	41	9,549,229	232,908	16	43%	15%	29%	29%
7	Pittsburgh	13	2,348,143	180,626	11	47%	11%	21%	27%
8	Seattle	26	3,735,216	143,662	7	46%	13%	18%	24%
9	Atlanta	27	5,700,990	211,148	14	43%	18%	15%	24%
10	Charlotte	9	2,427,024	269,669	17	43%	13%	16%	23%
11	Philadelphia	21	6,065,644	288,840	19	33%	12%	14%	20%
12	Cincinnati	7	2,156,723	308,103	22	37%	11%	11%	19%
13	Portland	18	2,382,037	132,335	4	37%	15%	12%	19%
14	Minneapolis-St. Paul	11	3,526,149	320,559	23	34%	9%	11%	18%
15	Cleveland	10	2,062,764	206,276	13	38%	6%	7%	16%
16	St. Louis	10	2,804,998	280,500	18	28%	6%	11%	15%
17	Baltimore	16	2,792,050	174,503	10	23%	11%	10%	14%
18	Kansas City	9	2,088,830	232,092	15	28%	7%	8%	14%
19	Sacramento	6	2,268,005	378,001	24	28%	6%	5%	12%
20	Los Angeles	59	17,737,760	300,640	20	24%	8%	8%	12%
21	Dallas-Fort Worth	38	7,104,415	186,958	12	23%	5%	8%	10%
22	Houston	16	6,636,208	414,763	25	28%	6%	5%	10%
23	Detroit	32	4,304,613	134,519	5	22%	6%	5%	10%
24	Miami	20	6,019,790	300,990	21	18%	8%	6%	9%
25	San Diego	19	3,283,665	172,824	9	18%	9%	5%	8%
26	Tampa	6	2,978,209	496,368	26	20%	6%	4%	8%
27	Orlando	3	2,390,859	796,953	28	14%	2%	2%	5%
28	San Antonio	3	2,377,507	792,502	27	11%	4%	1%	4%
29	Phoenix	5	4,561,038	912,208	29	10%	2%	1%	4%
30	Las Vegas	2	2,112,436	1,056,218	30	4%	7%	1%	3%
Weighted Average			273,694			35%	12%	16%	20%

KEY

Levels of Current Walkable Urbanism

■ Level 1: Highest Walkable Urbanism
 ■ Level 2: Upper-Middle Walkable Urbanism
 ■ Level 3: Lower-Middle Walkable Urbanism
 ■ Level 4: Lowest Walkable Urbanism

New York
Denver
Boston
Washington, DC
San Francisco Bay Area
Chicago

6

Number of Metros

375

Total WalkUPs

49%

Share of All WalkUPS
in Top 30 Metros

29-37%

Range of Metro
Office, Retail, & Rental
Multi-Family
Space Located
in WalkUPs

LEVEL 1: HIGHEST WALKABLE URBANISM

The New York City metro area is ranked first for current walkable urbanism. New York has a reputation as a walkable urban center, however that reputation is primarily based on New York City, especially Manhattan, rather than the surrounding metro area. The vast majority of the region's WalkUPs are located in Manhattan and Brooklyn, and only 8 percent of walkable urban space is located in the suburbs. Therefore, the New York metro area's ranking in first place is largely a result of conditions within the city itself rather than the metro area as a whole.

A major surprise in the Current Walkable Urbanism rankings is that metro Denver is at second place, only after the New York City metro area. Since 2003, metro Denver has been on a walkable urban infrastructure investment boom and is one of the top five metros for investment in rail transit, which has sparked a renaissance of walkable urbanism throughout the metro area, though primarily in the city itself. The fact that metro Denver is the location of the 7th most well-educated workforce of the top 30 metro areas with 42 percent of the workforce holding college degrees (compared to 31 percent for the US and 37 percent for the largest 30 metros) is part of the reason for the jump in walkable urban development since the knowledge economy demands walkable urbanism.²⁴ Metro Denver, like New York and other metros, has only a small fraction of their walkable urbanism in the suburbs, but as will be discussed in the Future Growth Momentum section, this will probably change in the future, providing expansion of walkable urbanism in the suburbs.

Boston and Washington, DC are ranked 3rd and 4th with the primary reason for their high ranking being the much higher share of their WalkUP space in suburbs, 40 and 44 percent respectively. Both of these metro areas are urbanizing their suburbs in places like Cambridge and Somerville in metro Boston, Arlington and Reston Town Center in Northern Virginia, and downtown Bethesda and Silver Spring in suburban Maryland. Even Tysons in Northern Virginia, the prototypical "Edge City" of the late 20th century, is urbanizing about 40 percent of its 2,400 acres, evolving into 4 to 5 WalkUPs, as a result of four new Metrorail stations opening in 2014.

The San Francisco Bay Area comprises three central cities (San Francisco, Oakland and San Jose) where 88 percent of the walkable urbanism is concentrated. The Bay area has a retro-drivable sub-urban development pattern that still hangs on in the Mid-Peninsula, i.e., Silicon Valley, in spite of the boom in walkable urbanism in the three cities. In addition, there are many private shuttle buses taking thousands of knowledge workers living in San Francisco on the 30-mile drive daily to Menlo Park, Palo Alto and Cupertino, where the "legacy" companies of the tech world, Facebook, Google, and Apple, locate in drivable sub-urban campuses. The new generation of tech firms, such as Uber, Lyft, Salesforce, and many others locate in walkable urban central cities. Also, many of the non-Bay Area legacy company offices are located in WalkUPs throughout the country. Yet Silicon Valley hangs in there with late 20th century drivable sub-urban locations. One of the primary reasons for this retro-development pattern is that Silicon Valley is one of the most hostile locations to high density development in the country, artificially forcing up land prices. The downtowns of Menlo Park, Palo Alto, and Cupertino are frozen in their 1960s form and density, rather than emerging as major WalkUPs.

Metro Chicago is very similar to metro New York, Philadelphia and Cleveland in that virtually all of the walkable urbanism is in the central city. And like all of these other comparable metros, that is because it is generally illegal to build walkable urbanism in the suburbs; the zoning and massive neighbor opposition do not allow it without heroic legal and political battles. This category of metro area, the central city-focused walkable urban development metros, are economically competing with one hand behind their back since much of the market, probably ~50 percent, wants walkable urbanism in the suburbs but these metros cannot deliver what the market wants. However, Chicago has been remarkably successful in taking long-time drivable sub-urban corporate headquarters from the suburban locations to the walkable urban central city, such as Boeing, Motorola, United Airlines, and even the dominant drive-thru fast food chain, McDonald's. The reason, according to Cushman & Wakefield, GWU, and Smart Growth America research, is both the need to recruit Millennial workforce who demand walkable urbanism and to brand the company as a 21st century, knowledge-based company.²⁵

Pittsburgh
Seattle
Atlanta
Charlotte
Philadelphia
Cincinnati
Portland
Minneapolis-St. Paul

8

Number of Metros

132

Total WalkUPS

17%

Share of All WalkUPS
in Top 30 Metros

18-27%

Range of Metro
Office, Retail, & Rental
Multi-Family
Space Located
in WalkUPS

LEVEL 2:

UPPER-MIDDLE WALKABLE URBANISM

The eight metro areas in this second level cover two broad categories: those that concentrate the vast majority of walkable urban development in the center cities (Pittsburgh, Charlotte, Cincinnati, Minneapolis-St. Paul, and Philadelphia) and those that are beginning to expand into urbanizing suburbs (Seattle, Atlanta, and Portland).

Pittsburgh, Cincinnati and Philadelphia are old-line metros that have generally outlawed walkable urbanism in the vast majority of their suburbs, though there are 18th and 19th century suburban town centers where walkable urbanism is beginning to re-emerge, especially in Philadelphia. Charlotte and Minneapolis-St. Paul have both heavily invested in light rail systems from the center cities to the suburbs and there is a chance that urbanizing suburbs might occur, assuming proper zoning is allowed.

Metro Seattle and Portland have been well-known for walkable urbanism for decades, especially as their light rail systems have expanded from the center city to the suburbs. The complex approval processes in both metros has slowed the delivery of both the needed light rail systems, especially in Seattle, and the delivery of walkable urban zoning and development. However, both metros are on the path to expand walkable urban market share growth and therefore higher walkable urban rankings.

Metro Atlanta has always been the poster child of sprawl, along with metro Dallas-Fort Worth and Houston, for most of the late 20th century. Today, Atlanta is one of the fastest turn-around metros in this economic cycle in walkable urban market share growth (see the Future Growth Momentum section). The substantial growth of downtown adjacent WalkUPS around the Beltline, the most important trail and rail transit investment occurring in the country, and the urbanizing suburbs in places like Perimeter and Avalon, should continue the growth of walkable urbanism for years to come.



Cleveland
St. Louis
Baltimore
Kansas City
Sacramento
Chicago
Los Angeles
Dallas-Fort Worth
Houston
Detroit

9

Number of Metros

196

Total WalkUPS

26%

Share of All WalkUPS
in Top 30 Metros

10-16%

Range of Metro
Office, Retail, & Rental
Multi-Family
Space Located
in WalkUPS

LEVEL 3: LOWER-MIDDLE WALKABLE URBANISM

This level includes two types of metro areas: formerly industrial Northern metro areas (plus Sacramento) and three Sun Belt metro areas whose growth exploded during the drivable sub-urban era of the late 20th century. The formerly industrial Northern metro areas include Cleveland, St. Louis, Baltimore, and Detroit, with the addition of Sacramento. These metro areas have struggled to introduce walkable urbanism, with a maximum of 16 percent of their office, retail, and rental multi-family occupied space in WalkUPS. Much of this lag is due to a historic lack of rail transit infrastructure, although now all of these cities have rail systems in the early stages of development. They are also handicapped by local consumer perceptions that walkable urbanism, especially rail-based, transit-oriented development (TOD) is not compatible with their traditions, such as metro Detroit as the “Motor City.” Even with these impediments, several of these cities have relatively high shares of walkable urban space in their suburbs, such as Detroit (22 percent), St. Louis (20 percent), and Baltimore (16 percent). Furthermore, there are certainly signs of future growth in walkable urbanism in these metros, as will be shown in the Future Growth Momentum section, especially Detroit and St. Louis.

Los Angeles, Dallas-Fort Worth, and Houston, the three Sun Belt metro areas in this level, have typified drivable sub-urban development for decades. In particular, Los Angeles has 34 percent of its walkable urban space in its suburbs, among the largest share in the country. This is predominantly due to the redevelopment of suburban town centers established when the region had the longest rail transit system in the world during the early 20th century, before it was ripped out in the postwar period. The Los Angeles region is now investing heavily in new public transit infrastructure (the largest rail transit expansion in the country) and promoting TOD, since the common consensus is that car-based transportation has reached its grid-locked peak.²⁶

Both metro Houston and Dallas-Fort Worth have not given up on car-based transportation, as the third beltway around Houston (88 miles in length) demonstrates. However, both of these Texas metros have turned to light rail transit as well, though it is generally rail transit playing catch up with well-established sprawl over great distances. Houston has the third highest rent premium in the country for walkable urban development (89 percent) and Dallas-Fort Worth has seen a recent explosion in new WalkUPS, including suburban town centers and greenfield developments, indicating pent up demand for walkable urbanism in these two car-dominated metros.



Miami
San Diego
Tampa
Orlando
San Antonio
Phoenix
Las Vegas

LEVEL 4: LOWEST WALKABLE URBANISM

7

Number of Metros

58

Total WalkUPs

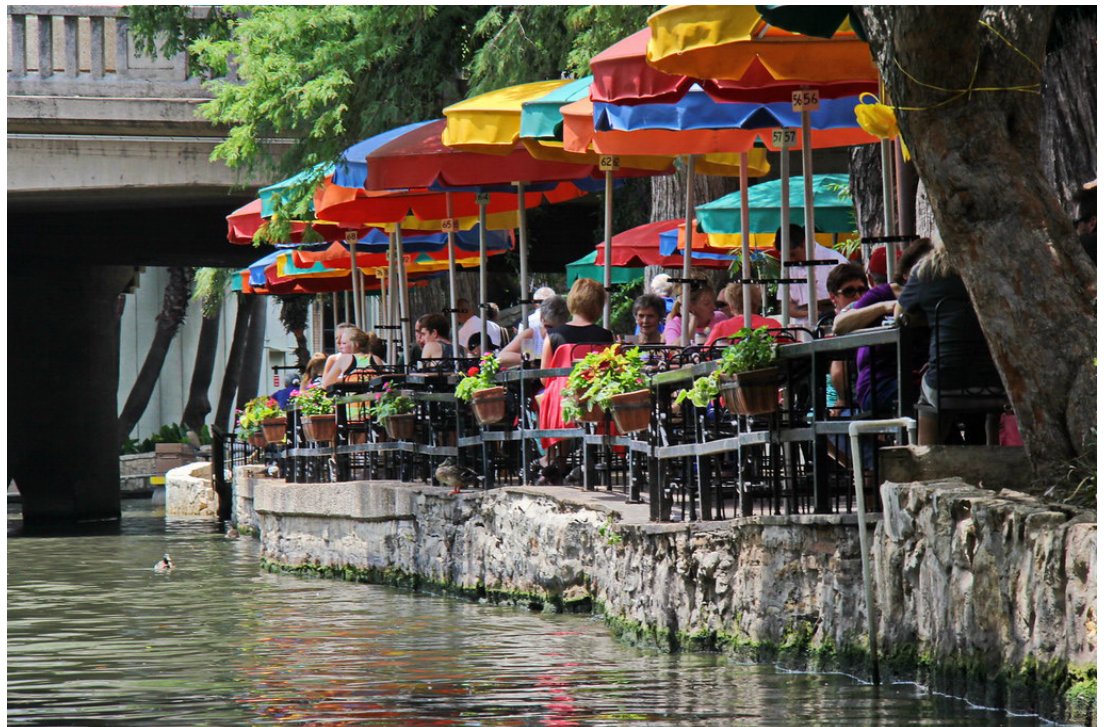
8%

Share of All WalkUPS
in Top 30 Metros

3-9%

Range of Metro
Office, Retail, & Rental
Multi-Family
Space Located
in WalkUPS

Without exception the metro areas in this level are in the Sun Belt and exemplify the drivable sub-urban development of the late 20th century. Yet this lowest level exhibits interesting trends. In several of these metro areas there have been key walkable urban infrastructure investments made in recent years, such as the introduction of Phoenix's Valley Metro Rail and the new streetcar lines in Tampa and St. Petersburg, FL (same metro area). This level also demonstrates some of the highest percentages of WalkUP space in suburbs with 44 percent in Miami and 33 percent in Phoenix, sparked by walkable urban growth in Tempe, Mesa, and other suburbs. Miami's high percentage of urbanizing suburbs is, like Los Angeles, due to the growth of suburban town centers, which were established over a hundred years ago by the rail transit that then dominated the metro area, and which are being re-established on the same right of ways today, promoting redevelopment of these original TOD towns (Fort Lauderdale, West Palm Beach, among others). Additionally, Miami has the fourth-highest rent premium for walkable urbanism amongst the top 30 metro areas at 85 percent. Miami has been attracting residents and second home-owners from more walkable urban international metro areas.



Five Indicators of Future Growth Momentum

Determining the future of walkable urbanism involves using forward-looking indicators, such as the Market Share Shift Index, rent premiums, absorption, and the urbanization of suburbs, as described below. The top six current ranked metros are shaded in green in the tables on the following pages.

MARKET SHARE SHIFT INDEX

The Market Share Shift Index (MSSI) measures the walkable urban market share increase or decrease of net absorption of real estate for a given time period, compared to market share at the beginning of that time period (the base year). For this analysis, we measure market share increase from 2010 through 2018 against the base year 2010 occupancy (January 1, 2010), near the start of the current real estate cycle. Because the MSSI measures marginal change in market share against a base year, it shows which metropolitan areas are growing fastest in walkable urban market share absorption, which means a concomitant decline in drivable sub-urban market share. A MSSI of more than 1.0 indicates that a metro area has absolutely and relatively gained walkable urban market share since 2010 (all of the metros in this research). A MSSI of between 0.0 and 1.0 indicates a metro area had positive absolute walkable urban absorption, but a loss of relative market share since 2010 (no examples of this condition). A negative MSSI indicates both a relative loss of market share and negative absolute absorption since 2010 (no examples of this condition).

For the MSSI, this analysis used office and rental multi-family space only. We did not include retail in this calculation, since the structural disruption in the retail market has rendered the future of retail development unclear, which makes MSSI results difficult to interpret. Retail market shifts include competition from online retailers, the decline of big-box retailers and department stores, and the decline in retail sales per square feet per capita.

Drivable sub-urbanism was the dominant development pattern in the mid- to late-20th century due to a confluence of factors. During this time, historic WalkUPs, which were generally the center city downtown and occasional suburban downtowns, lost market share in virtually

every metro area in the country. Between 1950 and 2000, historic WalkUPs had MSSI values of less than 1.0 (losing market share though growing in absolute terms), generally having MSSIs of between 0.40 and 0.60. WalkUPs had been losing market share to drivable sub-urban development for over a half century.

Examining the period between 2010-2018, the market share of walkable urban places increased in all of the largest metropolitan areas. MSSI values ranged from 1.04 in Houston to an amazing 5.82 in Detroit. The average of all 30 metros is 2.30 which means that nationwide, walkable urbanism is relatively and absolutely gaining market share 130 percent more than its 2010 base year. This is a major sign of pent up demand. Conversely, drivable sub-urban places are relatively and absolutely losing market share, which explains the high vacancies in many business parks.

The six metros ranked the highest for current walkable urbanism (shaded in green) fall between 1.83 and 2.70, with an average MSSI of 2.06. It is natural for these highly ranked metros to have a lower MSSI than the average due to their higher base of walkable urbanism. The metros that rank the highest for MSSI tend to fall within the Upper-Middle and Lower-Middle levels of current walkable urbanism. It is natural for metros that have only recently shifted their development patterns to walkable urbanism to have a high MSSI, due to starting at a low base. Detroit, Pittsburgh, Baltimore, and Cleveland are just recently getting back into the walkable urban game after a century of disinvestment in these places.

MARKET SHARE SHIFT INDEX		
REGION	RANK	MSSI 2010-2018
Detroit	1	5.82
Pittsburgh	2	3.63
San Diego	3	3.60
Baltimore	4	3.43
Cleveland	5	2.74
Las Vegas	6	2.72
Los Angeles	7	2.72
Boston	8	2.70
St. Louis	9	2.65
Philadelphia	10	2.44
Chicago	11	2.44
Atlanta	12	2.38
Portland	13	2.28
Denver	14	2.28
Sacramento	15	2.21
Tampa	16	2.11
Kansas City	17	2.11
San Francisco Bay Area	18	2.08
Phoenix	19	2.01
Miami	20	1.95
Seattle	21	1.92
Washington, DC	22	1.92
Cincinnati	23	1.89
Dallas-Fort Worth	24	1.87
New York	25	1.83
Orlando	26	1.77
Minneapolis-St. Paul	27	1.75
Charlotte	28	1.68
San Antonio	29	1.59
Houston	30	1.04
Weighted Average		2.30

SHARE OF WALKUP OFFICE & MULTI-FAMILY ABSORPTION

This metric shows the WalkUP office and rental multi-family absorption in each metro area for 2010 to 2018 as a percentage of the entire metro area absorption. Of the top 30 metro areas, 13 had 50 percent or more of their office and rental multi-family absorption in WalkUPs. All six metros ranked in the highest level of current WalkUP rankings are above 50 percent of all metro absorption.

Nearly all office and rental multi-family absorption in metro Pittsburgh, Denver, Boston, Chicago, and New York City was in WalkUPs, indicating sprawl in office and rental multi-family may be over or is nearing its end.

Metro Pittsburgh had negative relative and absolute drivable sub-urban absorption between 2010 and 2018. It is the only metro area with walkable urban absorption over 100 percent.

CURRENT RENT PER SQUARE FOOT WALKUP PREMIUM

This metric measures the current rent premium for office, retail, and rental multi-family. Relative to their drivable sub-urban counterparts, the WalkUPs of the top 30 metro areas all had positive average rent premiums for these three income real estate products. The top six metro areas are all within the top eleven rent premiums and have an average rent premium of 119 percent, meaning tenants in WalkUPs are willing to spend over twice what they would pay in drivable sub-urban locations.

This is another sign of the pent up demand for walkable urbanism, which is then used for the next metric—how much this rental rate premium has increased during this real estate cycle.

WALKUP ABSORPTION		
REGION	RANK	% SHARE 2010-2018
Pittsburgh	1	126%
Denver	2	99%
Boston	3	99%
Chicago	4	85%
New York City	5	78%
San Francisco Bay Area	6	66%
Detroit	7	64%
Washington, DC	8	62%
Cleveland	9	57%
Atlanta	10	57%
Philadelphia	11	56%
St. Louis	12	54%
Baltimore	13	52%
Seattle	14	48%
Portland	15	45%
Charlotte	16	42%
Cincinnati	17	41%
Minneapolis-St. Paul	18	37%
Kansas City	19	36%
Los Angeles	20	35%
Sacramento	21	31%
San Diego	22	29%
Dallas-Fort Worth	23	23%
Miami	24	21%
Tampa	25	18%
Houston	26	14%
Orlando	27	11%
Phoenix	28	9%
San Antonio	29	7%
Las Vegas	30	4%
Weighted Average		51%

WALKUP RENT PREMIUM		
REGION	RANK	% PREMIUM 2018
New York City	1	198%
Denver	2	96%
Houston	3	89%
Miami	4	85%
Boston	5	83%
Charlotte	6	77%
Chicago	7	75%
Washington, DC	8	67%
Seattle	9	64%
Atlanta	10	63%
San Francisco Bay Area	11	62%
Pittsburgh	12	60%
Sacramento	13	60%
Portland	14	59%
Tampa	15	56%
Cleveland	16	53%
Las Vegas	17	49%
Phoenix	18	47%
Philadelphia	20	46%
Los Angeles	19	46%
Minneapolis-St. Paul	21	45%
Orlando	22	42%
Detroit	23	42%
San Antonio	24	41%
Dallas-Fort Worth	25	41%
San Diego	26	34%
Cincinnati	27	30%
St. Louis	28	24%
Kansas City	29	23%
Baltimore	30	11%
Weighted Average		75%

CHANGE IN RENT-PER-SQUARE FOOT PREMIUM

This is a measure of the change of the rate of growth of the rental premium. This metric examines increases or decreases in WalkUP rent premiums for office, retail, and multi-family rental between 2010 and 2018. Using a weighted average, rental premiums in all 30 metros increased by 19 percent during this real estate cycle. This indicates pent up demand.

The six metros ranked highest for current walkable urbanism together experienced a 43 percent increase in rent premium. Driving this increase is New York City, which jumped from a 101 percent rent premium for office, retail, and multi-family rental in 2010 to a 198 percent rent premium in 2018 – a dramatic increase of 97 percentage points.

While all 30 metros exhibited walkable urban rent premiums in 2018, seven metros experienced a decline in the size of their premiums over the last nine years. These cities range from ranking high in current levels of walkable urbanism (Washington, DC and Denver) to the lowest walkable urbanism (Phoenix and Orlando).

This is a measure of the growing pent up demand in 22 of the 30 metros which may not have reached the peak in walkable urban rental premiums yet. However, Denver and Washington, DC, which are in the top level of Current ranked metros, have seen a decrease in rent premiums over the course of this cycle, indicating they may have peaked out in walkable urban rental rate growth for this cycle.

WALKUP RENT PREMIUM		
REGION	RANK	CHANGE IN PREMIUM 2010-2018
New York City	1	97%
Las Vegas	2	61%
Portland	3	32%
Pittsburgh	4	27%
Minneapolis-St. Paul	5	26%
Miami	6	23%
Chicago	7	22%
Seattle	8	21%
Tampa	9	21%
San Francisco Bay Area	10	21%
Boston	11	17%
Cleveland	12	16%
Charlotte	13	16%
Sacramento	14	14%
Detroit	15	13%
Philadelphia	16	11%
San Diego	17	10%
St. Louis	18	9%
San Antonio	19	7%
Houston	20	4%
Los Angeles	21	3%
Cincinnati	22	1%
Atlanta	23	0%
Washington, DC	24	-3%
Baltimore	25	-3%
Kansas City	26	-5%
Phoenix	27	-6%
Dallas-Fort Worth	28	-8%
Denver	29	-12%
Orlando	30	-14%
Weighted Average		19%

SHARE OF OFFICE & RENTAL MULTI-FAMILY WALKABLE URBANISM IN THE SUBURBS

Promoting walkable urbanism at the regional level involves both redeveloping the central city and the urbanizing the suburbs. However, to date most metros have a small share of their walkable urban development in their suburbs. There is a proven market for urbanizing the suburbs, as shown by the success of suburban WalkUPs such as Watters Creek (Dallas suburb), downtown Kirkland (metro Seattle), downtown Glendale (Los Angeles), and Avalon (Atlanta suburb). There appears to be a substantial and broadly untapped market for walkable urbanism close to suburban households and businesses.

Of the ten metros that have the greatest share of WalkUPs in their suburbs, several are metro areas that have rail infrastructure from a century ago, even if that rail was removed in the 1960s and is currently being reinstated. The revitalization of suburban town centers originally built around and linked by rail transit, such as downtown Ft. Lauderdale (metro Miami), Pasadena (Los Angeles), and Evanston (Chicago), is now common. These areas were initially laid out to be pedestrian friendly and to benefit from proximity to rail transit.

For metro areas that rank low on this metric, but high on our ranking for current walkable urbanism, there is tremendous potential for urbanizing their suburbs. These metros, which include New York City, Philadelphia, Minneapolis-St. Paul, and Chicago, are all older metros that share NIMBY (“not in my backyard”) opposition to density in their suburbs, even around existing rail stations that are generally surrounded by surface parking lots. If this opposition can be overcome, these metro areas will accrue great economic, social equity, and environmental benefits.

WALKUP SPACE IN SUBURBS		
REGION	RANK	% SHARE 2018
Miami	1	44%
Washington, DC	2	44%
Boston	3	40%
Los Angeles	4	34%
Phoenix	5	33%
Detroit	6	22%
St. Louis	7	20%
Atlanta	8	19%
Baltimore	9	16%
Seattle	10	15%
Portland	11	13%
Dallas-Fort Worth	12	13%
San Francisco Bay Area	13	12%
Cincinnati	14	10%
New York City	15	8%
Orlando	16	7%
Las Vegas	17	6%
San Diego	18	6%
Denver	19	6%
Houston	20	5%
Tampa	21	5%
Chicago	22	4%
Cleveland	23	4%
Kansas City	24	4%
Philadelphia	25	3%
Sacramento	26	2%
Pittsburgh	27	1%
Minneapolis-St. Paul	28	1%
Charlotte	29	0%
San Antonio	30	0%
Weighted Average		17%

WALKABLE URBANISM OF THE 30 LARGEST U.S. METROPOLITAN AREAS

Future Growth Momentum Ranking

Rank	Region	Market Share Shift Index 2010-2018	Share of WalkUp Absorption 2010-2018	Share of WalkUPs in Suburbs 2018	WALKUP RENT PREMIUMS		Future Growth Momentum Index
					Current Premium 2018	Change in Premium 2010-2018	
1	Boston	2.70	99%	40%	83%	17%	0.63
2	New York City	1.83	78%	8%	198%	97%	0.62
3	Detroit	5.82	64%	22%	42%	13%	0.56
4	Washington, DC	1.92	62%	44%	67%	-3%	0.53
5	Pittsburgh	3.63	126%	1%	60%	27%	0.52
6	Miami	1.95	21%	44%	85%	23%	0.51
7	Los Angeles	2.72	35%	34%	46%	3%	0.46
8	Denver	2.28	99%	6%	96%	-12%	0.45
9	Chicago	2.44	85%	4%	75%	22%	0.44
10	Atlanta	2.38	57%	19%	63%	0%	0.42
11	San Francisco Bay Area	2.08	66%	12%	62%	21%	0.41
12	Portland	2.28	45%	13%	59%	32%	0.40
13	St. Louis	2.65	54%	20%	24%	9%	0.40
14	Seattle	1.92	48%	15%	64%	21%	0.40
15	Baltimore	3.43	52%	16%	11%	-3%	0.38
16	Phoenix	2.01	9%	33%	47%	-6%	0.38
17	Cleveland	2.74	57%	4%	53%	16%	0.37
18	Philadelphia	2.44	56%	3%	46%	11%	0.34
19	Las Vegas	2.72	4%	6%	49%	61%	0.34
20	San Diego	3.60	29%	6%	34%	10%	0.34
21	Charlotte	1.68	42%	0%	77%	16%	0.32
22	Sacramento	2.21	31%	2%	60%	14%	0.31
23	Cincinnati	1.89	41%	10%	30%	1%	0.31
24	Tampa	2.11	18%	5%	56%	21%	0.30
25	Minneapolis-St. Paul	1.75	37%	1%	45%	26%	0.30
26	Dallas-Fort Worth	1.87	23%	13%	41%	-8%	0.29
27	Houston	1.04	14%	5%	89%	4%	0.27
28	Kansas City	2.11	36%	4%	23%	-5%	0.27
29	Orlando	1.77	11%	7%	42%	-14%	0.24
30	San Antonio	1.59	7%	0%	41%	7%	0.22
Weighted Average		2.30	51%	17%	75%	19%	

A Future Growth Momentum Index was developed to rank the 30 largest metros on the probable future of their walkable urban development. This metric indicates how walkable or sprawling their future development is likely to be.

This Index is a blend of the metrics outlined in the above section, weighted as noted below:

Office & Multi-Family Absorption:

20%: Market Share Shift Index (MSSI)
20%: Share of Regional Office & Multi-Family Space Absorption in WalkUPs

Share of WalkUP Space in Suburbs:

20%: Share of Total Metro WalkUP Office & Retail Space Located in Suburbs

WalkUP Rent Premiums:

30%: 2018 WalkUP Office, Retail, & Multi-Family Rent Premiums
10%: Change in WalkUP Office, Retail, & Rental Multi-Family Premiums from 2010 to 2018

KEY

Levels of Future Growth Momentum for Walkable Urbanism

Level 1:
High Future Growth Momentum for Walkable Urbanism

Level 2:
Upper-Middle Future Growth Momentum for Walkable Urbanism

Level 3:
Middle Future Growth Momentum for Walkable Urbanism

Level 4:
Low Future Growth Momentum for Future Walkable Urbanism

LEVEL 1: HIGH FUTURE GROWTH MOMENTUM FOR WALKABLE URBANISM

Boston • New York City • Detroit • Washington, DC • Pittsburgh • Miami

The top 6 metro areas with the highest Future Growth Momentum have absorbed a weighted average of 72 percent of all office and multi-family space in WalkUPs between 2010 and 2018. Another strong indicator of future growth is that these 6 metros have a weighted average of 122 percent rent premium (over twice) in comparison to the rest of their metro area as of yearend 2018.

The highest-ranked Future Growth Momentum metro areas over the years have been Boston, New York City, and Washington, DC. They all have high, but not the highest, Market Share Shift Indices since they have a large base of walkable urban development, so it is natural for the MSSIs to begin to level off.

However, two unexpected metro areas, Detroit and Pittsburgh, are in this highest Future Growth Momentum level due to extraordinary MSSIs. Pittsburgh has grown its walkable urban market share by nearly four times its 2010 base and Detroit has grown by five times its 2010 base. These two metros started at low 2010 walkable urban bases but have witnessed high walkable urban absorption, leading to exceeding high MSSIs.

Like election results, it is possible to “call” an end of sprawl in metropolitan Boston in office, retail, and rental multi-family housing due to the analysis in the Current Ranking and Future Growth Momentum Ranking. This analysis examines income-producing real estate, and does not include single-family housing, which is a primary driver of sprawling development. However, within these market-driven product types (office, retail, and rental multi-family), we observe that in metro Boston drivable sub-urban development may be reaching its end. Why metro Boston? Observations of the reasons for Boston’s shift toward walkable urbanism include:

- Significant amount of historic walkable urban (pre-1930s) neighborhoods to redevelop in the cities of Boston and neighboring Cambridge;
- High tech driven economy;
- Extensive, though perpetually underfunded, regional rail system;
- One of the highest levels of walkable urbanism in the suburbs, now including brownfield development (Cambridgeport) in addition to suburban town center redevelopment (Cambridge); and

- Pride of place, while hard to quantify, but Bostonians have remarkable pride in their city and metro area, even referring to it as the “hub of the universe.”

The Boston metro serves as a likely harbinger of the new walkable urban development era in the U.S. By the next Foot Traffic Ahead analysis, we may see the end of sprawl for income-producing office, retail, and rental multi-family properties in additional metro areas, such as New York City and Washington, DC.

LEVEL 2: UPPER-MIDDLE FUTURE GROWTH MOMENTUM FOR WALKABLE URBANISM

Los Angeles • Denver • Chicago • Atlanta • San Francisco Bay Area • Portland • St. Louis • Seattle • Baltimore

These 9 Upper-Middle level Future Growth Momentum metropolitan areas have absorbed a weighted average of 55 percent of all office and multi-family space between 2010 and 2018. Another strong indicator of future growth is that these 9 metros have a weighted average of 56 percent rent premium as of 2018.

Chicago, San Francisco Bay Area, Portland, and Seattle have all ranked relatively high on the Future Growth Momentum metros over the years. They all have high, but not the highest, MSSIs since they have a large base of walkable urban development so it is natural for the MSSIs to begin to level off.

However, five metros in the Upper-Middle Future Growth Momentum level Denver, Los Angeles, St. Louis, Atlanta, Portland, and Seattle, all have one thing in common; they have been making substantial investments in rail transit in the past decade. This has resulted from dedicated local funding sources of rail transit, both capital and operating costs, generally using sales taxes. While our research has shown that non-rail transit anchored WalkUPs can emerge, the majority of WalkUPs in our research are rail transit served.

LEVEL 3: MIDDLE FUTURE GROWTH MOMENTUM FOR WALKABLE URBANISM

Phoenix • Cleveland • Philadelphia • Las Vegas • San Diego • Charlotte • Sacramento • Cincinnati • Tampa • Minneapolis-St. Paul

The Middle Future Growth Momentum metropolitan areas have all recently invested in rail transit systems to a greater extent (Phoenix, Charlotte, San Diego, and Minneapolis-St. Paul) or a lesser extent (Philadelphia, Las Vegas, Cincinnati, Tampa,

and Sacramento). However, there is a natural lag time to seeing walkable urban development on the ground as is evident in this level of metros.

Two metros in this level, Phoenix and Las Vegas, were drivable sub-urban boom towns during the late 20th century with hardly any walkable urban fabric from the early 20th century, so they start from a very low base of walkable urban space. The jury is still out on these two metros as to whether they will fully engage in walkable urban development in the future.

LEVEL 4: LOW FUTURE GROWTH MOMENTUM FOR FUTURE WALKABLE URBANISM

Dallas-Fort Worth • Houston • Kansas City • Orlando • San Antonio

The 5 Low Future Growth Momentum metropolitan areas have all had long-standing public policy favoring drivable sub-urban development, though a few signs of change have recently appeared. These metros have absorbed a weighted average of 19 percent of all office and multi-family space in WalkUPs between 2010 and 2018, a comparatively low amount. However, it is notable that the weighted average rent premium for this tier was 59 percent as of 2018. It is not a coincidence that four of the five are in Florida and Texas, the home of extensive recent highway building.

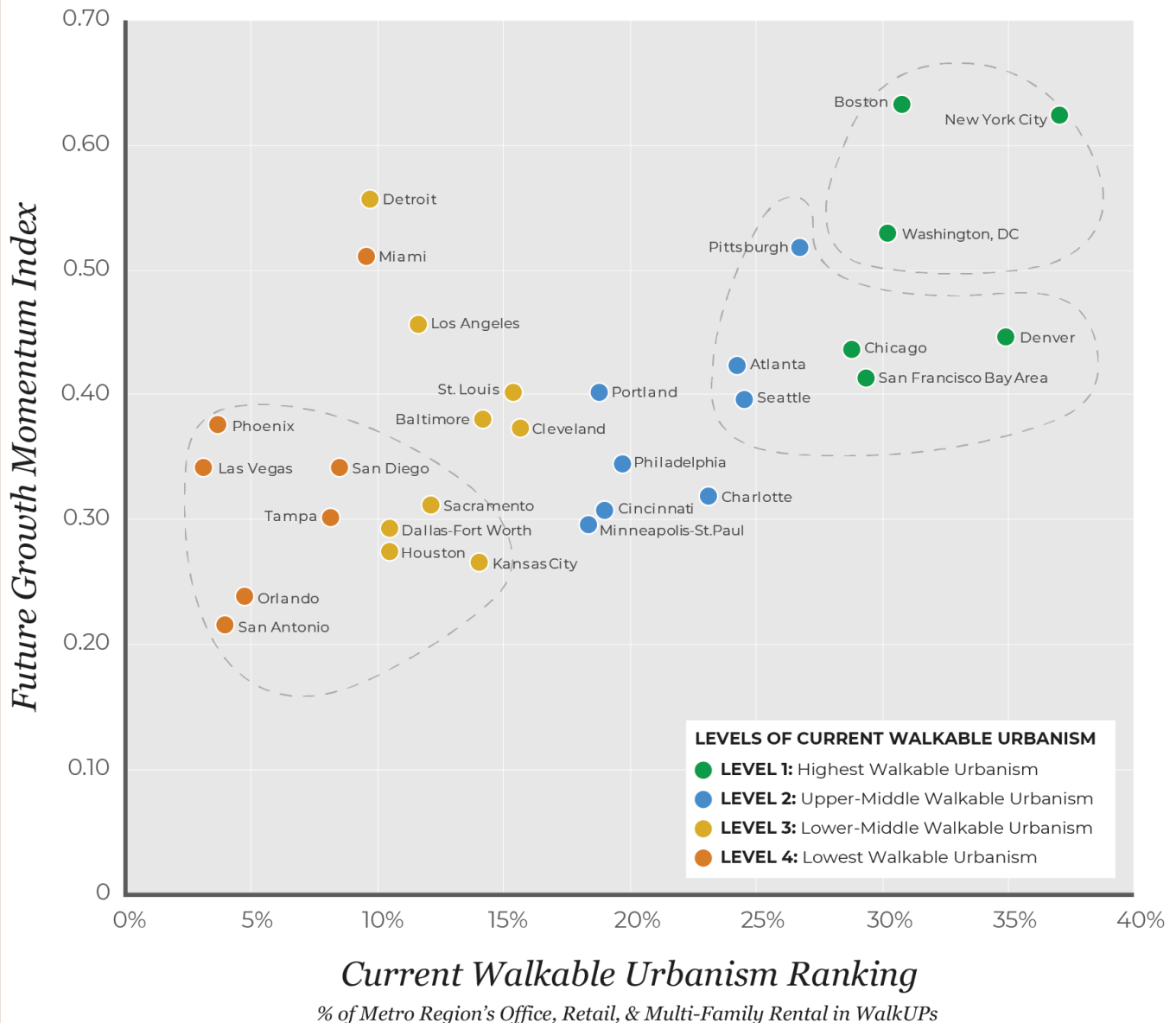
The signs of change in these metros include initial investment in light rail transit in Dallas-Fort Worth and Houston and in a new streetcar line in Kansas City. The investment in light rail in Dallas-Fort Worth and Houston has been rail chasing established sprawl, meaning the rail lines are extremely long (therefore expensive to build since economies of scale do not apply to infrastructure, which has a distance-based cost structure). Long rail lines are also less convenient for the users. However, many surprising WalkUPs are popping up in the suburbs of Dallas-Fort Worth, in addition to impressive downtown and downtown adjacent WalkUPs.

CURRENT VS FUTURE MOMENTUM RANKINGS

The scatterplot below shows results for the top 30 U.S. metro areas on both performance metrics at the same time. The metro areas circled on the upper right, New York, Boston and Washington, DC, are the current and future most walkable urban metros in the country and have been since this survey was first conducted in 2007.

The circle immediately below captures both currently highly ranked metros, Chicago and the San Francisco Bay Area, which have been on the leading edge of walkable urban development for two decades, with newly emerging walkable urban metros, Denver, Pittsburgh, Atlanta and Seattle.

The metro areas circled on the lower left, San Antonio, Orlando, Tampa, Dallas-Fort Worth, Houston, Las Vegas, Phoenix, San Diego, Sacramento, and Kansas City are the primarily Sun Belt metros with a dominant public policy of pursuing drivable sub-urban development to this day. However, even in these metros there are seeds of walkable urban infrastructure and WalkUP development, such as Downtown Fort Worth (Dallas-Fort Worth), Downtown Houston (Houston), Downtown and Midtown (Sacramento), Crossroads (Kansas City), Little Italy (San Diego), Downtown Winter Park (Orlando), and the Channel District (Tampa).



HOUSING IN WALKUPS



Housing in WalkUPs: A Disconnect Between Supply and Demand

The vast majority of the urban built environment is housing. For-sale housing is by far the most plentiful real estate product type by square footage in all of the top 30 U.S. metropolitan areas. Aggregated across the 30 metro markets covered by this study, for-sale housing is 71 percent of the metropolitan product mix, and for-sale and rental housing combined is 84 percent of inventory. These figures are particularly notable given that they cover only the commercial real estate core of each region, and that most U.S. metros have vast additional residential exurbs surrounding these cores.

Our social equity metric includes the cost of housing as a core component, because the availability and affordability of housing in WalkUPs in particular has reached crisis levels in many U.S. metros. The rental premiums for office and retail found in this study demonstrate that WalkUPs are highly desirable places to do business. The multifamily rental premium suggests that they are also valued by the market as places to live.

In order to further investigate this hypothesis, we use Redfin Estimates for for-sale housing valuations, which one evaluation found to be the most reliable in the for-sale industry.²⁷ We also obtained a second, highly precise source of multifamily rental asking rents, from Yardi Matrix.²⁸

HOUSING COSTS IN WALKUPS

We compared each region's median for-sale price per square foot and the median asking rent per square foot in WalkUPs to the metro area median price. Every region has positive premiums for for-sale and rental housing in WalkUPs. The average for-sale per square foot premium was 90 percent, or the estimated equivalent of an additional \$174 per square foot in home sale price when located in a WalkUP. The average rental premium was 46 percent, ranging from 27 percent in Denver to 88 percent in Detroit. For-sale premiums varied more dramatically by metro, with Boston leading the country at a whopping 223 percent estimated premium to buy

a home in a WalkUP, contrasted with the relative bargains still available in Baltimore, where a home in a WalkUP costs only an estimated 17 percent more than the regional median.

There has been substantial discussion and concern about gentrification and displacement in walkable urban places. For example, the New York Times, summarizing recent research, reported that the "superstar cities," which are the highest ranked Current Metropolitan Areas, are losing population in the last couple years for the first time.²⁹ This loss is primarily low and middle income, non-college educated, workers. These workers' wages are no longer rising to off-set high housing prices, forcing them to relocate away from job centers. The residential cost premiums found in this research are consistent with this dynamic.

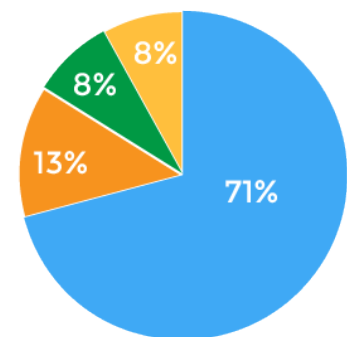
The spatial distribution of supply may play a role in setting these prices. One study estimates that over seven million units of supply are needed to keep pace with population growth and urban job agglomeration, primarily in superstar cities.³⁰ Across the top 30 U.S. metros, the ratio of owner-occupied housing, 60 percent, is very close to the national homeownership rate of 64.2 percent.³¹ This reflects the dominance of the suburbs in housing supply in the largest 30 metro areas, with the average suburban housing mix in these metro areas composed of 66 percent owner-occupied units. In the center cities of these regions, owner-occupied housing composes only 46 percent of housing inventory, on average, while in WalkUPs, the most scarce land of all, owner-occupied housing is only 26 percent of housing inventory on average. This may partially explain the particularly extreme for-sale housing premiums found in WalkUPs.

It is vital to note, however, that while the supply of housing in WalkUPs is dominated by rental units, even for renters the overall actual quantity of inventory in WalkUPs is vanishingly scarce. These places are dominated by commercial and institutional real estate land uses, limiting capacity and opportunity for housing to be located

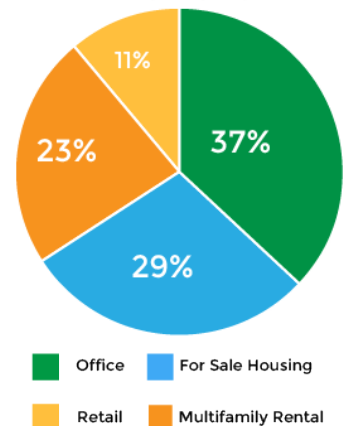
in and immediately around these job-rich locations. At the same time, the astronomical for-sale housing premiums available in and around WalkUPs create tremendous entrenched wealth for existing property owners that can form a powerful resource base for so-called "Not In My Backyard" (NIMBY) opposition to multifamily housing.

This dynamic can make the creation of new WalkUPs in the urbanizing suburbs particularly challenging. However, given the infrastructure, resource, and zoning constraints on simply infinitely densifying the most urban areas, expanding WalkUP supply in the suburbs is critical to the future economic, social, and environmental health of metro areas.

US Metropolitan Built Environment



WalkUPs



Do Suburban Residents Need WalkUPs?

We repeated our price ratio calculations after sorting WalkUPs into center city and suburban locations. In the case of a few metro areas, all of the WalkUPs are located in the center city, and so it was not possible to calculate a suburban premium (San Antonio and Charlotte). In two other regions that had only one suburban WalkUP each, we had insufficient data from Redfin's automated valuation model, which requires a minimum number of comparable real sales transactions and thus cannot always create an estimate in areas where inventory is very limited to allow the calculation of a suburban premium (Cincinnati and Pittsburgh). The for-sale housing results are shown in the figure on the following page.

In center cities, the dramatic for-sale housing premiums for homes in WalkUPs remain universally positive, ranging from roughly even in Baltimore to 286% over the center city median price per square foot in New York. However, there is substantial variation in the direction and magnitude of the suburban WalkUP premium between regions. In five regions (New York City, Boston, Washington, DC, Portland, and Chicago), the suburban WalkUP premium is negative, meaning that the average price per square foot for a home in a suburban WalkUP in these regions is lower than the suburban median price per square foot. In nine regions (Orlando, Las Vegas, Phoenix, Sacramento, Kansas City, St. Louis, Detroit, Cleveland, and Baltimore), the suburban WalkUP premium is higher than the center city WalkUP premium. Four of these nine metros (Kansas City, St. Louis, Detroit, and Baltimore) are also the only regions in the top 30 where the regional average WalkUP rental premium exceeds the for-sale housing premium. In other words, in those four regions it is cheaper on a per-square-foot basis to own than to rent in order to get into a WalkUP.

These results are indicative of the relative economic health of some center cities relative to their surrounding suburbs. Where center city WalkUPs are most plentiful and thriving, premiums are strong and positive, making it tougher for suburban WalkUPs to compete and correlating market segmentation for form with spatial location, at least as far as for-sale housing product is concerned (it

	OWNER	RENTER
ALL 30 METRO AREAS		
Average	60%	40%
Minimum	52% (Los Angeles)	32% (Detroit)
Maximum	68% (Detroit)	48% (Los Angeles)
SUBURBS		
Average	66%	34%
Minimum	53% (Las Vegas)	26% (San Antonio)
Maximum	74% (San Antonio)	47% (Las Vegas)
CENTER CITY		
Average	46%	54%
Minimum	30% (Miami)	45% (San Francisco Bay)
Maximum	55% (San Francisco Bay)	70% (Miami)
WALKUPS		
Average	26%	74%
Minimum	13% (Sacramento)	61% (Phoenix)
Maximum	39% (Phoenix)	87% (Sacramento)

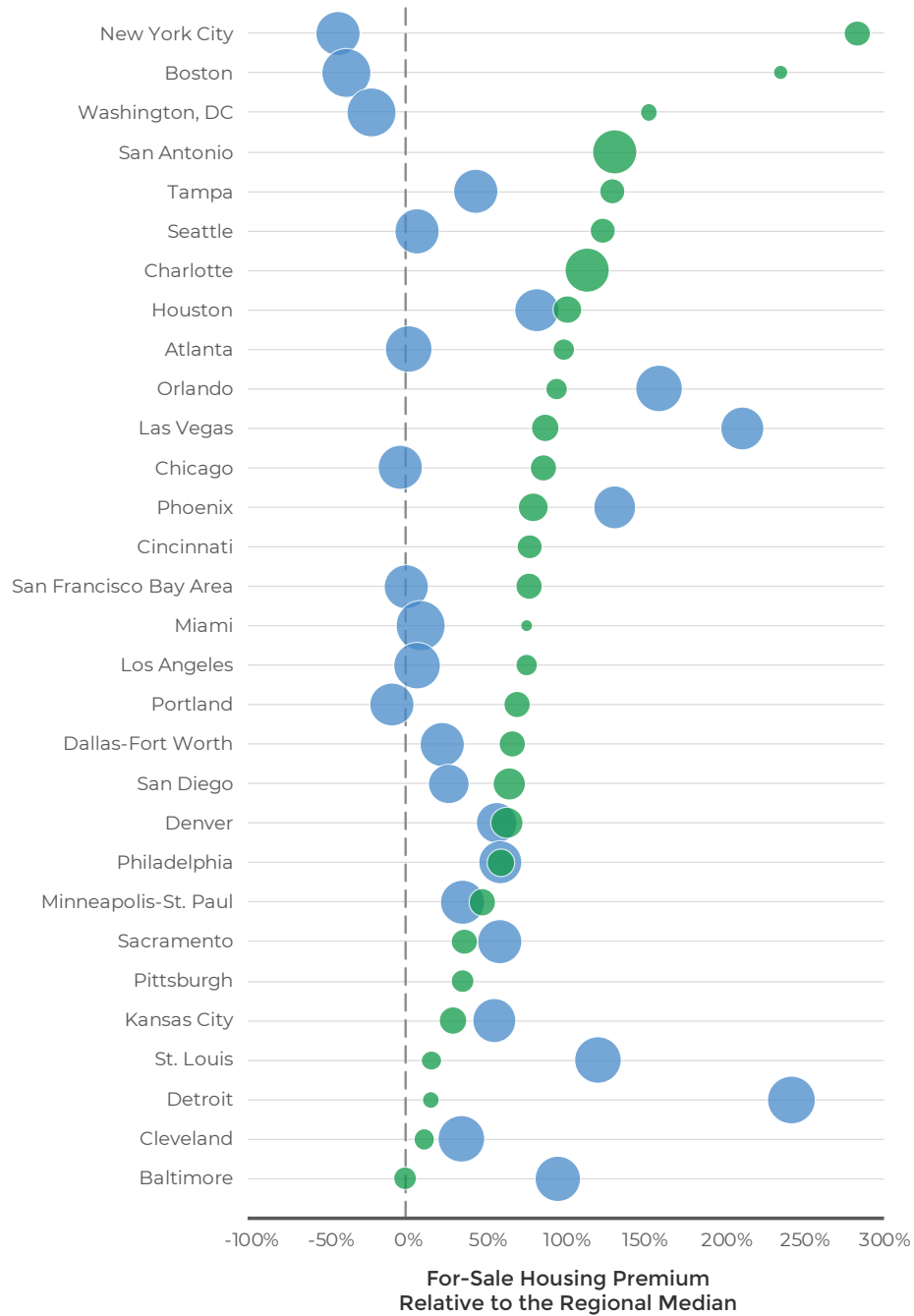
Source: American Community Survey, 2013-2017 5-Year Estimates

should not be assumed, for example, that this is also true for office). Where center city WalkUPs are more constrained or less appealing, their suburban counterparts see an increase in demand/valuation.

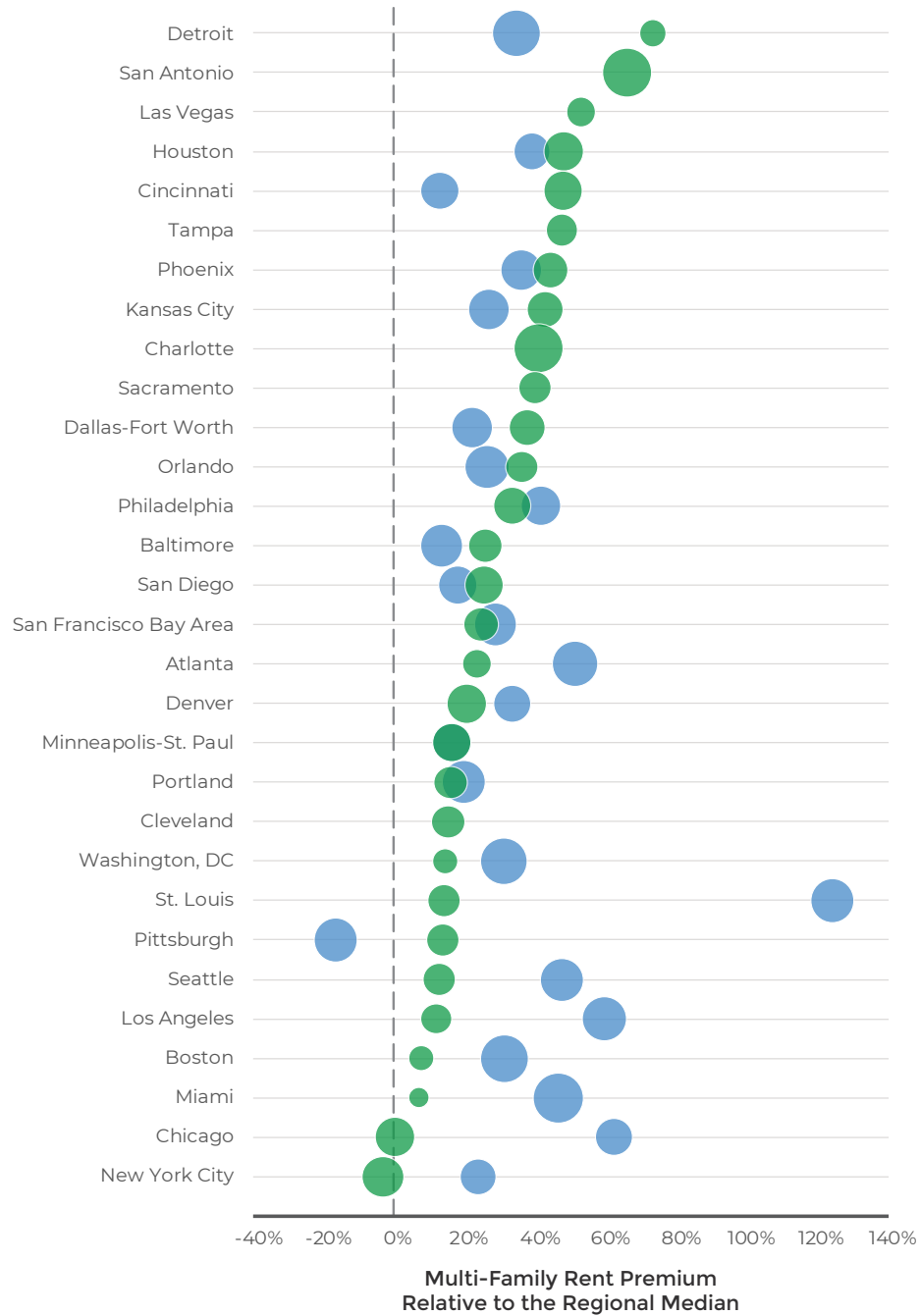
The rental housing market shows a notably different pattern when broken down by center city and suburb. In two of the most highly walkable urban metros, New York and Chicago, the center city WalkUP premium is slightly negative, indicative of the widespread availability of walkable urban multifamily rental housing outside of WalkUP boundaries. There is no need to pay a premium to locate within a WalkUP if it is possible to locate nearby. In all markets with sufficient data to calculate suburban WalkUP premiums except Pittsburgh, the premiums are positive and in many cases are comparable to or greater than their center city counterparts. The size of the bubbles in the figures indicate the share of the owner or renter households that are located in cities versus suburbs.

In 21 out of 30 metros, a majority of renters are located in the suburbs—and this is a conservative estimate given the relatively small size of our regional market definitions compared to U.S. Census MSAs. Very high rent premiums for suburban WalkUPs indicate intense competition for the most desirable suburban rental housing, which is a major equity red flag for suburban jurisdictions.

FOR-SALE HOUSING PREMIUMS FOR WALKUPS IN CITIES AND SUBURBS
(dot size indicates regional share of owner-occupied housing)



MULTI-FAMILY RENTAL PREMIUMS FOR WALKUPS IN CITIES AND SUBURBS
(dot size indicates regional share of renter-occupied housing)



SOCIAL EQUITY RANKINGS



WalkUPs and Social Equity

Nationally, there is a growing concern that strong economic performance in walkable urban places comes at the cost of greater social inequality. The significant premiums for rental and for-sale housing identified in this report may preclude lower-income households from locating in WalkUPs or displace existing residents.

Nearly every major metropolitan area in the U.S. is facing an affordable housing crisis. Rising costs of housing, coupled with increasing income inequality have led to a mounting concern about gentrification and displacement in the nation's metro areas. As identified in the housing section of this report, premiums for housing in WalkUPs in the top 30 metro areas average 90 percent for for-sale housing and 46 percent for rental housing. While this premium signifies tremendous economic success in walkable urban places, it also suggests that they are becoming less affordable. The dense, mixed-use fabric of WalkUPs means that they provide greater access to job opportunities, services, and transportation than surrounding drivable sub-urban places. Therefore, the potential for low-income households to be priced out of WalkUPs has significant social equity implications.

This report examines social equity trends in WalkUPs that emerge at the regional level by creating a Social Equity Index (SEI). The index begins with housing costs for lower income households in determining social equity, and then adds transportation costs, and the balance between rental and for-sale housing inventory. It is important to note that these metrics do not capture all components of social equity. For example, they do not measure important qualities such as access to good schools, safe streets, or healthy environments, which are much more difficult to measure consistently across neighborhoods at the national level.

The Social Equity Index builds on the previous (2016) iteration of Foot Traffic Ahead, which analyzed social equity indicators for each metro as a whole and their correlation with current levels of walkable urbanism. This report specifically examines social equity indicators within each region's WalkUPs to ask whether each region's walkable urban places are inclusive.

REGION	CURRENT WALKABLE URBANISM RANK	POPULATION IN WALKUPS	HOUSING COST 80% AMI (POPULATION WEIGHTED AVERAGE)	TRANSPORTATION COST 80% AMI (POPULATION WEIGHTED AVERAGE)	% RENTER-OCCUPIED HOUSING	SOCIAL EQUITY INDEX
New York City	1	2,820,405	39.2%	8.9%	75%	86.3
Washington, DC	4	206,853	34.9%	10.2%	70%	83.4
Baltimore	17	97,622	30.5%	13.4%	62%	77.7
Minneapolis-St. Paul	14	61,833	26.2%	13.7%	76%	73.4
Boston	3	536,812	33.2%	12.8%	71%	71.0
Philadelphia	11	180,655	36.5%	13.2%	61%	69.0
Chicago	6	750,201	40.5%	14.4%	62%	67.8
Cincinnati	12	24,432	23.1%	18.0%	80%	66.4
Denver	2	115,296	30.7%	16.8%	68%	64.4
San Francisco Bay Area	5	647,919	35.9%	12.9%	73%	61.0
Kansas City	18	16,480	27.1%	18.0%	77%	57.0
Pittsburgh	7	61,681	32.5%	17.2%	73%	55.1
Atlanta	9	114,680	35.0%	18.9%	66%	53.7
Portland	13	55,786	33.2%	16.9%	73%	52.3
Seattle	8	162,685	32.2%	14.7%	78%	52.3
Detroit	23	105,196	26.8%	20.6%	63%	51.9
St. Louis	16	32,990	38.1%	19.3%	73%	49.7
Houston	22	71,396	42.4%	19.5%	66%	48.8
San Antonio	28	8,007	26.6%	21.3%	80%	44.4
Charlotte	10	27,150	41.7%	20.0%	66%	43.1
Sacramento	19	20,282	22.7%	16.3%	87%	41.2
San Diego	25	45,863	39.6%	18.0%	75%	37.7
Orlando	27	5,820	47.4%	19.3%	71%	34.5
Phoenix	29	12,522	28.0%	19.2%	83%	30.7
Cleveland	15	20,398	25.0%	18.6%	80%	26.9
Tampa	26	7,437	45.3%	20.4%	77%	25.9
Dallas-Fort Worth	21	78,626	37.2%	18.2%	80%	22.1
Las Vegas	30	10,129	21.8%	20.6%	87%	19.9
Miami	24	115,719	39.7%	18.3%	79%	19.5
Los Angeles	20	424,362	42.4%	18.4%	80%	12.8
Weighted Average			37%	12.5%	75%	

The Social Equity Index is based on three components, equally weighted at one third each. To calculate each region's Social Equity Index Score, we calculated the SEI score for each WalkUP and aggregated the scores to the region using a population-weighted average:

- **HOUSING COST**—The percentage of household income for a household earning 80 percent of the area median (AMI) required to pay for housing in the WalkUP. The U.S. Department of Housing and Urban Development (HUD) defines a housing cost-burdened household as any which spends more than 30 percent of household income on housing. Lower housing costs for an 80 percent AMI household result in a higher ranking.
- **TRANSPORTATION COST**—The percentage of household income for a household earning 80 percent of the AMI required to pay for transportation as part of living in the WalkUP. Transportation costs are the second highest U.S. household expense, after housing, and have been fluctuating dramatically in recent years. According to the Bureau of Labor Statistics Consumer Expenditures Survey, the average U.S. household nationwide spends 13% of their pre-tax income on transportation.³²
- **RENTAL/FOR-SALE HOUSING MIX**—We assume that having a relatively balanced mix of rental and for-sale housing in each WalkUP is a positive outcome, allowing for a choice of housing opportunities. Distance from this 50/50 goal in either direction, toward a substantial majority for-sale or a majority rental housing, ranks the WalkUP lower. In other words, the closer to a balance of renter- and owner-occupied households, the higher the social equity ranking. The penalty is modest but exponential, so that the difference in score between a WalkUP that has a 50/50 inventory split and a 60/40 split is minor, but more extreme imbalances result in a much lower score.

HOUSING COSTS

Increasing price premiums for rental and for-sale housing in WalkUPs have significant social equity implications.

According to the 2016 Bureau of Labor Statistics from the Consumer Expenditure Survey, the national average for all household spending on housing is 27 percent, but in WalkUPs the average is 37 percent, likely due to the rent premiums found in the economic section of this report.³³ The population-weighted average housing cost in WalkUPs for households earning 80 percent AMI ranges from 21.8 percent in Las Vegas to 47.4 percent in Orlando. Whether a metro currently ranks as highly walkable urban does not seem to have a relationship to the housing costs in its WalkUPs. Of the six metros in the highest walkable urbanism level, the average housing costs in WalkUPs range from 30.7 percent in Denver to 40.5 percent in Chicago.

TRANSPORTATION COSTS

The transportation cost metric indicates the percentage of household income that a household earning 80 percent of AMI would spend on transportation. Transportation costs in WalkUPs in the top 30 metro areas range from 8.9 percent in New York City to 21.3 percent in San Antonio. New York City and Washington, DC, two regions with notoriously high housing costs, perform relatively well on our social equity income because of notably lower transportation costs from high levels of transit service and walking mode share among WalkUP households. However, Minneapolis-St. Paul and Cincinnati stand out particularly for their combination of lower housing and transportation costs. The bottom levels are dominated by sprawling Sun Belt cities with lower levels of walkable urbanism, where scarcer WalkUPs are characterized by high housing and transportation costs, and in many suburban WalkUPs, the complete exclusion of rental housing.

RENTAL/FOR-SALE HOUSING MIX

The concept behind this metric is that a balance between renters and owners in an area's housing occupancy indicates the presence of a variety of housing opportunities. The absolute difference between the share of renter-occupied housing and the share of owner-occupied housing is the relative measure in this metric, on a scale from 0 to 100. Therefore, a perfect 50%/50% split results in a perfect score of 0. As the difference between the share of owners and renters

grows, the penalty to the WalkUP's SEI score exponentially increases. Thus, an imbalance of 10 percent results in a very small penalty, but an imbalance of 40 percent or 50 percent (the near total exclusion of one form of housing) results in a major penalty.

WalkUPs often have a much higher share of renters than their central cities and regions as a whole. Therefore, the rental/for-sale housing mix for all metros is skewed towards a higher renter population.

The population-weighted average ranges from a 25 percent difference in share of rental/for-sale housing in Chicago, where 62 percent of all households in WalkUPs are renter-occupied, to 77 percent in Las Vegas, where 87 percent of all households in WalkUPs are renter-occupied.

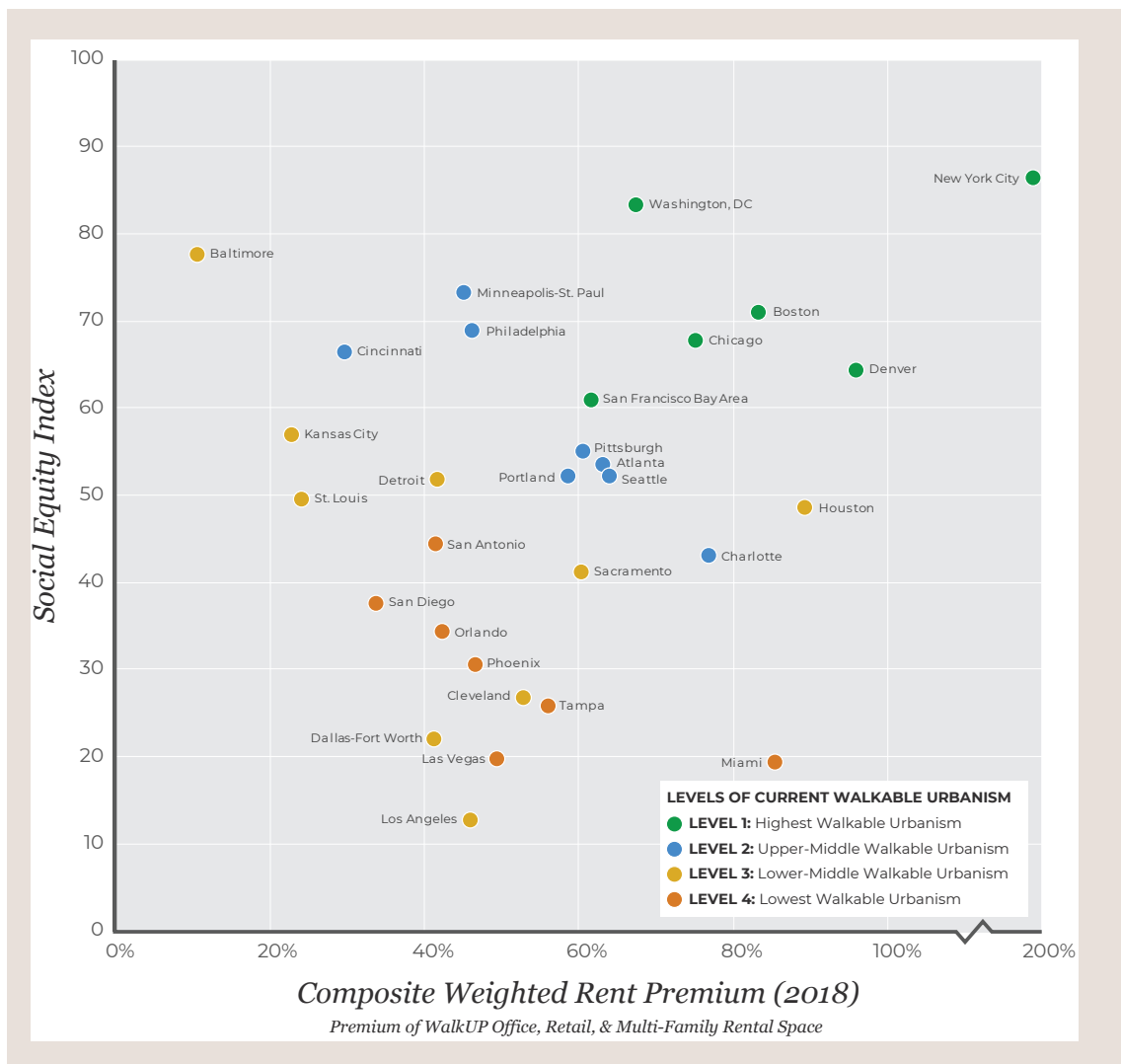
This metric penalizes WalkUPs that use exclusionary zoning to prohibit multifamily rental housing, as well as those where for-sale housing is effectively out of reach because of either supply, cost, or both. Among top-ranked WalkUPs, Baltimore stands out as a "best buy" opportunity for for-sale housing, while New York, Cincinnati, and Minneapolis-St. Paul are rich in opportunities for renters to locate in WalkUPs.

Economic prosperity and social equity are not mutually exclusive goals.

SOCIAL EQUITY & ECONOMIC PERFORMANCE SCATTERPLOT

Economic prosperity and social equity are not mutually exclusive goals. As metro areas continue to develop walkable urban places in their central cities and suburbs, they should seek to ensure that WalkUPs “do well while doing good.” Investing in walkability in particular serves both purposes, by increasing economic values and growth and reducing household transportation costs at the same time. Expanding the number and size of WalkUPs in center cities and suburbs will eventually satisfy the significant pent up demand, which will eventually level off and reduce the rent and for-sale premiums referred to above. However, there is a short-term demand to invest in public transportation, affordable housing, and rent stabilization, especially in regions with increasing income inequality where median incomes are rising and competition for walkable urban housing is intense.

It is counter-intuitive but the upper right hand corner of the scatterplot contains the metros with both the highest economic performance for their WalkUPs and the highest social equity for lower income households. While the “rent is too damn high” in nearly every metro for low income households, it is partially offset by lower household transportation costs. The majority of the WalkUPs in these six highest ranked metros (green dots) on both economic and social equity metrics have multiple transportation options, in addition to cars and trucks, which allow for lower income households to participate in society without maintaining a fleet of vehicles. By shifting household income from ownership and maintenance of automobiles (always depreciable assets) to housing (generally an appreciative asset), there is a far better opportunity to build household wealth. By dropping one car out of a household budget (AAA estimates the cost of car ownership averages \$8,849 per year), a family can increase their mortgage capacity by approximately \$150,000 at a 4 percent mortgage rate.³⁴



HIGHEST & LOWEST SOCIAL EQUITY INDIVIDUAL WALKUPS

At the place level, examining the 20 individual WalkUPS that score at the top and bottom of the Social Equity Index provides real examples of how WalkUPS can provide accessible housing and transit options. The ten highest-ranked WalkUPS are all in Manhattan with the very notable exception of Downtown Kansas City, KS. The dominance of Manhattan WalkUPS in these social equity metrics are the clear result of dramatically lower transportation costs for resident households, costs that are just a fraction (25 to 30 percent) of the national average. With most trips taken via walking, it partially offsets housing costs that greatly exceed the HUD cost burden standard. The presence of legacy affordable inventory of the municipal housing authority and rent-stabilized units in these particular Manhattan neighborhoods is an additional factor that has allowed renters to remain in these neighborhoods. The Downtown Kansas City, KS WalkUP (not to be confused with Kansas City, MO) which is the dominant downtown in the metro area, has extremely low housing costs which means it ranks high on social equity performance. However, Kansas City, KS is also ranked low in both the Future Growth Momentum rankings (28th) and the Current Walkable Urbanism (18th) rankings.

The ten least socially equitable WalkUPS in the country include four in Dallas-Fort Worth, three in Los Angeles, and one each in San Francisco, Cleveland, and Pittsburgh. These latter three WalkUPS are artifacts of the fact that these three places are enclaves of institutional land uses (i.e. universities and museums/stadiums), which have resulted in micro-environments with very, very low residential populations. The least socially equitable WalkUP in the top 30 metro areas, the Design District in Dallas, was torpedoed by its lack of owner-occupied housing, which can be remedied by future development. Southlake Town Center in the Dallas suburbs suffered the same penalty for legally mandating no rental housing, as well as posting high for-sale housing costs. In general, our social equity metric is designed to measure residential inclusion, and so areas with limited housing opportunities for a variety of reasons score poorly. The three in Los Angeles have exceedingly high housing costs for lower income households with only a minor impact of the rail transit investment the region has made so far on transportation costs.

10 HIGHEST SOCIAL EQUITY WALKUPS

WALKUP NAME	REGION	POPULATION IN WALKUPS	HOUSING COST (AS % FOR 80% AMI)	RENT/OWN MIX	TRANSIT ACCESSIBILITY	SOCIAL EQUITY SCORE
Lexington Avenue Corridor	New York	34,683	63.3%	3.7%	43%	71.4
Greenwich Village/ NYU	New York	42,212	55.9%	4.2%	65%	67.7
Union Square	New York	8,957	62.1%	4.3%	50%	67.4
Second Avenue Corridor	New York	88,893	48.5%	4.3%	71%	67.2
Madison Avenue	New York	23,020	68.2%	4.2%	31%	66.5
West Village	New York	20,227	54.8%	4.8%	66%	64.3
Kips Bay Bellevue	New York	34,071	43.2%	4.9%	73%	64.0
Flatiron/23rd Street	New York	20,601	60.7%	4.7%	69%	63.6
Downtown Kansas City, KS	Kansas City	563	10.2%	18.4%	89%	61.9
Chelsea	New York	48,681	50.9%	5.5%	65%	61.5

10 LOWEST SOCIAL EQUITY WALKUPS

WALKUP NAME	REGION	POPULATION IN WALKUPS	HOUSING COST (AS % FOR 80% AMI)	RENT/OWN MIX	TRANSIT ACCESSIBILITY	SOCIAL EQUITY SCORE
Design District	Dallas-Fort Worth	823	38.0%	18.0%	100%	16.7
South Coast Metro	Los Angeles	2,999	50.9%	20.0%	99%	17.5
Shops at Park Lane	Dallas-Fort Worth	138	30.0%	17.0%	100%	19.5
Southlake Town Center	Dallas-Fort Worth	207	84.0%	27.0%	4%	19.9
San Francisco State University	San Francisco	3,837	31.0%	15.0%	100%	20.2
Downtown Santa Monica	Los Angeles	4,019	43.3%	17.7%	97%	22.6
Legacy Town Center	Dallas-Fort Worth	1,906	31.0%	18.2%	98%	23.2
Campus District	Cleveland	3,813	26.3%	16.3%	99%	24.2
North Shore	Pittsburgh	137	42.7%	14.3%	96%	27.2
Union Station/Olvera Street	Los Angeles	4,551	40.3%	15.2%	96%	28.2

CORRELATIONS & FINDINGS



Metro GDP, Educational Attainment & Walkable Urbanism

Our research shows that a higher level of walkable urbanism in a metro area is associated with increased educational attainment and economic vitality.

A metro area's current level of walkable urbanism is significantly correlated with the educational attainment of its workforce and its gross domestic product per capita (GDP). Metro areas that have a higher amount of their total office, retail, and multi-family rental space in WalkUPs tend to have a population with higher levels of educational attainment and a higher GDP per capita. We do not yet know if there is a causal connection or it is just correlation.

WALKABLE URBANISM & EDUCATIONAL ATTAINMENT

Research has demonstrated that in the current real estate cycle, many companies are choosing to locate in vibrant, walkable neighborhoods in part because of the desire to attract talent.³⁵ The Amazon HQ2 search of 2017 and 2018 exemplified the importance of a highly-skilled workforce when companies make choices about where to develop and invest in the future.³⁶ Our research confirmed that in the metro areas considered by this study, the walkability of a metro area is associated with the level of education in its workforce. A regression analysis of the current percentage of walkable urban space in the top 30 metro areas and their level of educational attainment (as measured by the percentage of the population over 25-years-old with a bachelor's degree or higher) shows that there is a strong positive correlation ($R^2 = 0.58$). The scatterplot on the next page shows this correlation along with a trend-line. This relationship is evident when examining the top and bottom tiers of walkable urbanism. The six highest-ranked metro areas for current walkable urbanism have a population-weighted average share of population with a bachelor's degree or higher of 42 percent—11 percent higher than the average of 31 percent in the seven lowest-ranked metros for current walkable urbanism.

CURRENT WALKABLE URBANISM			EDUCATIONAL ATTAINMENT (METRO)		ECONOMIC PERFORMANCE	
RANK	REGION	% CURRENT OCCUPIED SPACE IN WALKUPS	% OF POPULATION 25 PLUS WITH A BACHELORS DEGREE	RANK	METRO GDP PER CAPITA	RANK (GDP)
1	New York City	37%	39%	12	\$71,537	5
2	Denver	35%	42%	7	\$66,938	7
3	Boston	31%	44%	6	\$79,527	3
4	Washington, DC	30%	53%	1	\$75,536	4
5	San Francisco Bay Area	29%	46%	3	\$103,116	1
6	Chicago	29%	38%	14	\$61,066	13
7	Pittsburgh	27%	38%	15	\$55,883	19
8	Seattle	24%	41%	8	\$83,686	2
9	Atlanta	24%	46%	2	\$58,672	17
10	Charlotte	23%	44%	5	\$60,416	14
11	Philadelphia	20%	37%	17	\$63,838	11
12	Cincinnati	19%	35%	18	\$55,280	20
13	Portland	19%	39%	11	\$65,722	9
14	Minneapolis-St. Paul	18%	46%	4	\$64,136	10
15	Cleveland	16%	30%	28	\$58,359	18
16	St. Louis	15%	40%	9	\$49,736	23
17	Baltimore	14%	39%	10	\$59,420	15
18	Kansas City	14%	39%	13	\$54,776	21
19	Sacramento	12%	31%	25	\$47,942	27
20	Los Angeles	12%	30%	27	\$58,682	16
21	Dallas-Fort Worth	10%	34%	19	\$67,518	6
22	Houston	10%	32%	21	\$65,756	8
23	Detroit	10%	32%	22	\$52,982	22
24	Miami	9%	31%	26	\$49,252	25
25	San Diego	8%	37%	16	\$61,512	12
26	Tampa	8%	31%	24	\$42,788	30
27	Orlando	5%	33%	20	\$48,087	26
28	San Antonio	4%	27%	29	\$49,733	24
29	Phoenix	4%	31%	23	\$46,254	28
30	Las Vegas	3%	23%	30	\$45,475	29
Weighted Average			37%		\$63,728	

WALKABLE URBANISM & ECONOMIC PERFORMANCE

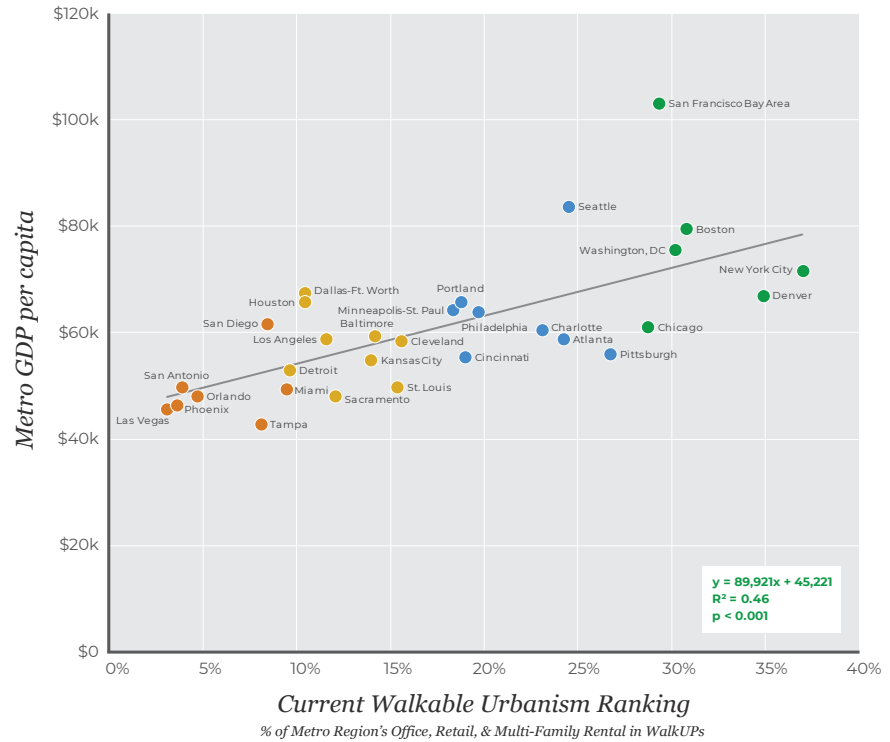
There is a well-researched relationship between the educational attainment of a metropolitan area's workforce and its GDP per capita. A 2010 study by the Federal Reserve Bank of New York found that in U.S. metro areas, "a one-percentage point increase in the proportion of residents with a college degree is associated with about a 2 percent increase in metropolitan area GDP per capita."³⁷ Therefore, it is unsurprising that just as with educational attainment, GDP per capita has a strong relationship with the share of walkable urban space in the top 30 metro areas. A regression analysis examining the relationship between walkable urbanism and GDP per capita shows a positive correlation ($R^2 = 0.46$). The scatterplot at the top of this shows this correlation along with a trend-line.

The six highest-ranked metro areas for current walkable urbanism have a population-weighted average GDP per capita of \$74,656 and the seven lowest-ranked metros for current walkable urbanism have a population-weighted average GDP per capita of \$49,156. There is a 52 percent GDP per capita "premium" for the most highly walkable urban metros over the least highly walkable urban metros. This 52 percent GDP per capita premium associated with walkable urban development is comparable to the GDP per capita premium between Germany, the leading major economy in the European Union, and Spain or Italy, middle income major economies in the EU.

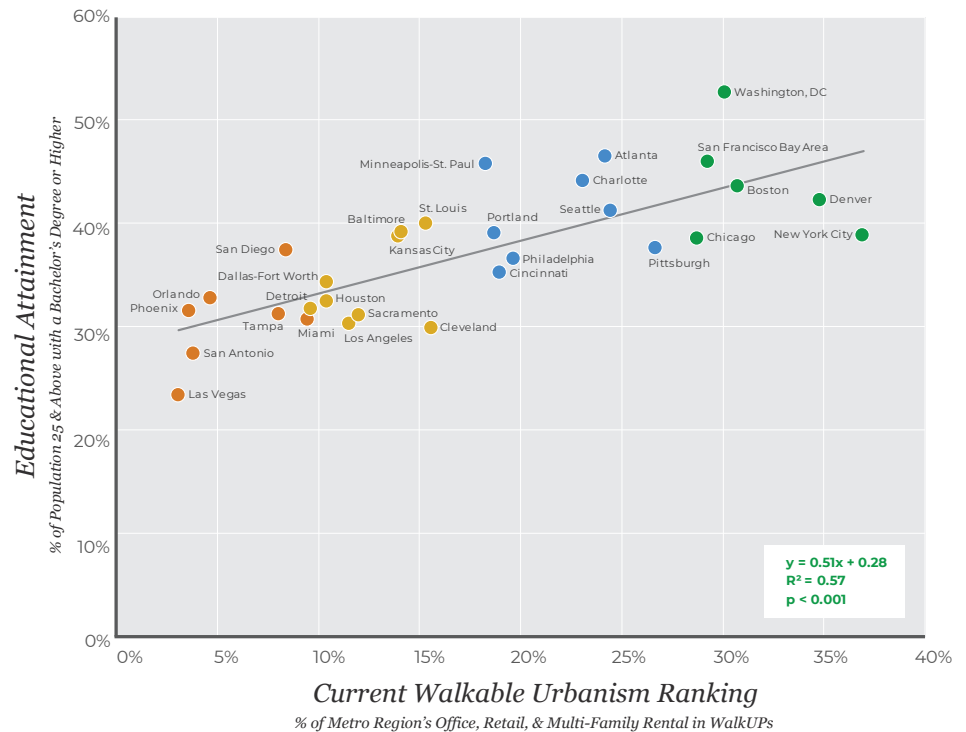
CONCLUSIONS

It is important to note that this research does not indicate that walkable urbanism causes more highly-educated people to move to metro areas or whether a more highly-educated population spurs more walkable development in a metro area. Furthermore, it does not indicate whether walkable places increase the GDP per capita in a metro area or whether wealthier places are better able to invest in walkable development. This study also acknowledges that GDP per capita and educational attainment are not the only two variables that impact the amount of walkable urban space in a metro area, and that a broader longitudinal study could illustrate these effects across time. However, regardless of specific causality, the factors of walkability, economic activity, and educational attainment are positively associated with one another in the nation's top 30 metro areas.

WALKABLE URBANISM & METRO AREA GDP PER CAPITA



WALKABLE URBANISM & EDUCATIONAL ATTAINMENT OF METRO AREA POPULATION



LEVELS OF CURRENT WALKABLE URBANISM

- **LEVEL 1:** Highest Walkable Urbanism
- **LEVEL 2:** Upper-Middle Walkable Urbanism
- **LEVEL 3:** Lower-Middle Walkable Urbanism
- **LEVEL 4:** Lowest Walkable Urbanism

CONCLUSIONS & FURTHER STUDY



Conclusions and Further Study

Our analysis demonstrates a structural shift from drivable sub-urban to walkable urban development patterns in all of the largest 30 U.S. metro areas. Growth in market share in walkable urban income products, at the expense of drivable sub-urban, is occurring nationwide—but at varying speed.

This study examined the current state of walkable urbanism (Current Rankings), trends pointing to movement towards walkable urbanism (Future Growth Momentum), social equity performance (Social Equity Rankings), and the relationship between walkable urbanism and education and GDP per capita.

Overall, we found market share growth in walkable urbanism for income products in all of the 30 largest U.S. metro areas. In addition, there are double-digit rental premiums on a per square foot basis for walkable urban product relative to regional averages in all 30 metro areas. Office and retail premiums are in the triple digits, on average. We found similar extremely high premiums for for-sale housing in walkable urban places.

There is a need to more deeply understand the role of walkable urbanism in addressing social equity challenges. There is a positive association between increased walkable urban development in the 30 largest metros and the social equity performance of WalkUPs by the measures we employed, which is consistent with the hypothesis that the obvious rental multi-family premiums demonstrated in this study can be addressed through conscious attainable housing programs, ending exclusionary zoning, and increasing WalkUP supply. In other words, with the right policies in place, there is no inherent tradeoff between doing well and doing good.

Suburban WalkUP premiums for rental multi-family are almost universally positive in the 30 metro areas. In many of the top-performing metros, the multi-family premium is higher in the suburbs than in the center city. Unmet demand for affordable pedestrian and transit-accessible multi-family apartments in the

suburbs is a major equity challenge for U.S. suburban jurisdictions.

Drivable sub-urban development has characterized U.S. metropolitan growth since 1946, structurally shifting from the predominant walkable urban pattern prior to the 1930s Great Depression (buildings permits were down by 60% between 1930 and 1945 from the 1920s). The data presented in this report strongly suggest that a structural shift back towards walkable urban development is occurring. This analysis shows that walkable urbanism has gained market share in the office, retail and rental multi-family product types over drivable sub-urban, possibly for the first time in 60-70 years.

The U.S. metropolitan landscape will likely continue to see a trend towards walkable urbanism, with real-estate indicators positively trending towards this pattern of urban development. Our previous WalkUP Wake-Up Call reports have demonstrated this for metro Atlanta, Boston, Washington, DC, and Detroit. Bolstered with the new data in this study, we suggest that the U.S. is undergoing a significant shift in growth patterns.

We present these results with a few caveats. First, owner-occupied space is not included in the data set of our analysis, although our hypothesis is that its inclusion would probably

With the right policies in place, there is no inherent tradeoff between doing well and doing good.

further underscore a trend towards a preference for WalkUPs. Second, this analysis does not mean that sprawl will immediately disappear from the American metropolitan landscape, especially since most buildings have a 40-year plus life before they have to be totally rehabilitated or torn down. Instead, this report suggests a change in trends that will take decades to play out; only 2 percent is added to real estate inventory per year in a good year.

The trend towards drivable sub-urban development lasted over 60 years, and only this past real estate cycle has marked the pivotal moment of a gradual shift to walkable urban development. Every region in the U.S. continues some level of sub-urban development, particularly on the metropolitan periphery where land prices are lowest. Many public policies favoring drivable sub-urban development remain in place, from legacy zoning to highway expansion policies. Drivable sub-urban for-sale home building at the fringe of metro areas in particular has not ceased, though it is getting harder for conventional builders to make their financial model work. However, drivable sub-urban for-sale and rental housing were the most negatively affected by the 2007-2009 housing and real-estate crisis. Most of the remaining “under-water”

existing housing inventory is in fringe drivable sub-urban locations. Both the private and public sectors should take note of the proven resilience of walkable urban product and plan accordingly.

While some metro areas rank highly in walkable urbanism, and will continue to benefit from the trend towards the WalkUP product type, the overall national trend largely depends on trends in the middle and lower-ranked metro areas. Will these metros continue to build predominantly drivable sub-urban or will they follow the path of highly ranked walkable urban metros? To what extent will these metros move towards urbanizing their sub-urban areas? Based on Future Growth Momentum Rankings, this analysis predicts the following low-to-middle ranked metros to accelerate their evolution in a walkable urban manner:

- Detroit
- Miami
- Los Angeles
- St. Louis
- Atlanta
- Portland
- Cleveland

Low walkable urban metros generally resist walkable urban development because of their long reliance on automobiles and drivable sub-urban development. These metros, however, display indications of movement towards walkable urbanism based on the data in this analysis. This is a result of these metros having advocates for walkable urbanism, including developers, neighborhood activists, and elected leaders. Nonetheless, dominant infrastructure, zoning, and land-use subsidies for many metros will continue to favor drivable sub-urban development in lower-ranked metros. It is possible for them to catch on to what we see as a national trend towards walkable urbanism, and to do so requires a set of advocates, place management, policy tools, and transportation infrastructure necessary to support the future form of American urban development.

Both the private and public sectors should take note of the proven resilience of walkable urban product and plan accordingly.

FUTURE RESEARCH

Further study should include analysis on the following topics:

- **Beyond Walk Score:** Build and apply an improved, scalable, policy-relevant, multi-dimensional measure of walkability that enables planning and projections.
- **Mix of Uses:** Apply a WalkUP typology to the 761 WalkUPs in the largest 30 metros and determine if there are variations in product mix and/or economic and social equity performance due to typology. Understand the range of product mixes within WalkUP types and in particular the role of housing, which is not currently central to the WalkUP definition.
- **Housing Costs:** In many U.S. markets there is a perception that for-sale housing costs have diverged from rental costs. As housing affordability is of high concern for many regions, further research could investigate recent trends in housing affordability. Tracking trends over the largest 30 metro areas, an analysis could rank markets along several measures, such as percent change in housing costs, level of divergence between for-sale and rental housing costs over time, and comparison of housing costs using local wages.
- **Place Management Organizations:** Place management organizations can take the form of public, private, non-profit, or mixed entities that promote development, support local services (like trash pick-up, trolley buses, and branding), and actively manage the place's brand identity. Often known as "Business Improvement Districts," national examples include the Times Square Alliance (New York City), the Buckhead Community Improvement District (Atlanta), and the Golden Triangle Business Improvement District (Washington, DC). Further research could establish the link between place management and the performance of individual WalkUPs.
- **Longitudinal Studies:** Further research into levels of social equity in WalkUPs could incorporate a longitudinal component—examining how economic performance and social equity metrics in WalkUPs relate over time. For example, are rising rental premiums in WalkUPs associated with displacement due to housing affordability? Do WalkUPs with higher for-sale housing premiums tend to have lower levels of homeownership? Understanding the social equity implications of strong economic performance in WalkUPs could help to inform policy decisions to ensure that low-income households are not priced out of walkable urban places that provide access to job opportunities, services, and transportation choices.
- **Comparative Research:** Foot Traffic Ahead primarily uses U.S. metro regions as the unit of analysis. Future research contrasting trends in city centers and suburbs, and U.S. metros and urban regions in other countries could illuminate powerful new dimensions of walkable urbanism with directly translatable insights for policy makers.

APPENDICES



Endnotes

EXECUTIVE SUMMARY

1. "Federal Involvement in Real Estate: a call for examination." (2013) Washington, DC: Smart Growth America. Available online at: <https://smartgrowthamerica.org/app/legacy/documents/federal-involvement-in-real-estate.pdf>.

INTRODUCTION & METHODOLOGY

2. Leinberger, C. (2007). "Footloose and Fancy Free: A Field Survey of Walkable Urban Places in the Top 30 U.S. Metropolitan Areas." Paper prepared for The Brookings Institution. Retrieved from www.brookings.edu/research/papers/2007/12/1128-walkableurbanism-leinberger.
3. Leinberger, C. and Lynch, P. (2014)/Leinberger, C., and Rodriguez, M. (2016), "Foot Traffic Ahead", Papers prepared by the George Washington University School of Business Center for Real Estate and Urban Analysis. <https://creua.business.gwu.edu/research/walkable-urbanism/>.
4. For further reading on defining central city and suburbs, see: Forsythe, A. (2012). Defining suburbs. *Journal of Planning Literature*, 27(3); Hall, P. G., & Pain, K. (2006). The polycentric metropolis: learning from mega-city regions in Europe. Routledge.
5. FAR refers to the ratio of occupied building space, not including parking, to the land on which the building sits. For example, if 100,000 square feet locates on a 100,000 square foot parcel, the FAR is 1.0, regardless as to whether it is a 1-story building on the entire parcel of a 10-story building with 10,000 square foot floor plates with 90,000 of surface parking lot and landscaping.
6. For previous George Washington University research focusing on specific individual U.S. metro areas, see <https://creua.business.gwu.edu/research/walkups/>.
7. Base or "export" jobs are those jobs in industries that export goods and services out of the metropolitan area, resulting in the influx of new revenues that in turn support 2-3 times more regional and local-serving job growth.
8. Ibid. Figures in table refer to Boston analysis.
9. Leinberger, C. and Alfonzo, M. "Walk This Way: The economic promise of walkable places in metropolitan Washington, DC." The Brookings Institution. Available at www.brookings.edu/research/papers/2012/05/25-walkable-places-leinberger.
10. Walk Score (www.walkscore.com) is a metric for determining the walkability of a property, neighborhood, place or city. It is a score between 0 (unwalkable) to 100 (most walkable) based upon the everyday needs (shopping, transit, parks, etc.) that are within walking distance. For full methodology, see www.walkscore.com/methodology.shtml. The 2012 Brookings methodology defines a WalkUP as having an average minimum WalkScore of 70.5 across its acreage. This research uses a WalkScore of 70 or greater at the most walkable residential point location because it was easier to obtain and apply across 30 metros.
11. MSA population estimates the U.S. Census American Community Survey, 2013-2017. Our top 30 list deviates from the Census ranking in three respects: we did not include San Juan, PR in this study due to lack of data availability, and we combined the Los Angeles and Riverside MSAs and the Denver and Boulder MSAs.
12. Office of Management and Budget. "Federal Register: 2010 Standards for Delineating Metropolitan and Micropolitan Statistical Areas; Notice." June 28, 2010. <https://www.govinfo.gov/content/pkg/FR-2010-06-28/pdf/2010-15605.pdf>.
13. Defining the boundaries of a place is not an exact science. Even among locals, substantial disagreement exists about where one place ends and another begins. Given these limitations, the definition of WalkUPs will continue to evolve. Nonetheless, this study represents the most comprehensive identification of such places to date.
14. Goodyear, S. "'Walk Score' is Great, But it Still Doesn't Capture 'Walk Appeal.'" (August 7, 2012) CityLab. Available online at: <https://www.citylab.com/transportation/2012/08/walk-score-great-it-still-doesnt-capture-walk-appeal/2858/>

15. Duncan DT, Aldstadt J, Whalen J, Melly SJ, and Gortmaker SL. *Int J Environ Res Public Health*. 2011 Nov;8(11):4160-79. doi: 10.3390/ijerph8114160. Epub 2011 Nov 4.; Duncan, D.T., Aldstadt, J., Whalen, J. et al. *GeoJournal* (2013) 78: 407. <https://doi.org/10.1007/s10708-011-9444-4>; Carr LJ, Dunsiger SI, Marcus BH. Validation of Walk Score for estimating access to walkable amenities. *Br J Sports Med* 2011;45:1144-1148; Scott C. Brown, Hilda Pantin, Joanna Lombard, Matthew Toro, Shi Huang, Elizabeth Plater-Zyberk, Tatiana Perrino, Gianna Perez-Gomez, Lloyd Barrera-Allen, José Szapocznik. Walk Score®: Associations with Purposive Walking in Recent Cuban Immigrants, *American Journal of Preventive Medicine*, Volume 45, Issue 2, 2013, Pages 202-206, <https://doi.org/10.1016/j.amepre.2013.03.021>; Towne, S.D., Won, J., Lee, S. et al. *J Community Health* (2016) 41: 977. <https://doi.org/10.1007/s10900-016-0180-z>.
16. Center for Neighborhood Technology, Location Efficiency Hub, 2017. Available at: <https://htaindex.cnt.org/>. Census block group values ascribed to study geographies using area weights.

METROPOLITAN RANKINGS

17. U.S. Census, American Community Survey, 5-Year Estimates, 2013-2017. Top 30 metro areas in this report merge Los Angeles-Long Beach-Anaheim, CA and Riverside-San Bernardino-Ontario, CA and exclude San Juan, Puerto Rico.
18. U.S. Bureau of Economic Analysis, "Table 7. Relation of Gross Domestic Product, Gross National Product, and National Income, 2017"; "Table 2. Real Gross Domestic Product (GDP) by Metropolitan Area, 2012-2017, chained 2009 dollars, 2014"; Accessed April 2019.
19. Center for Real Estate and Urban Analysis. The George Washington University. "WalkUPs." Available online at: <https://creua.business.gwu.edu/research/walkups/>.
20. Leinberger, C., and P. Lynch. "The WalkUP Wake-Up Call: Boston." (2015) Washington, DC: George Washington University Center for Real Estate and Urban Analysis. Available online at: https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2016/12/CREUA_Walk-up-Wake-Up-Call-Bostonb-2hjhpbe.pdf
21. Leinberger, C., Rodriguez, M., and T. Loh. "The WalkUP Wake-Up Call: New York." (2017) Washington, DC: George Washington University Center for Real Estate and Urban Analysis. Available online at: <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2019/03/WalkUPWakeUpNY-ugry8.pdf>
22. Loh, T. and C. Leinberger. "The WalkUP Wake-Up Call: Dallas-Fort Worth." (2019) Washington, DC: George Washington University Center for Real Estate and Urban Analysis. Available online at: <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2019/01/DFW-WalkUP-Wake-Up-Call-2019-yjel01.pdf>
23. Leinberger, C., and M. Rodriguez. "The Economic and Fiscal Impacts of Rock Ventures and the Family of Companies on the City of Detroit and the State of Michigan." (2016) Washington, DC: George Washington University Center for Real Estate and Urban Analysis. Available online at: https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2018/05/Rock-Ventures_GW_Report_2017_pdf-1zc9cj4.pdf
24. U.S. Census, American Community Survey, 5-Year Estimates, 2013-2017.
25. "Core Values: Why American Companies Are Moving Downtown." (2015) Washington, DC: Smart Growth America. Available online at: <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2016/12/Why-American-Companies-are-Moving-Downtown-1eu2kmg.pdf>
26. "How to Pass a Mega Transportation Measure: LA County's Measure M Lessons Learned." (2018) Los Angeles County Metropolitan Transit Authority. Available online at: <http://theplan.metro.net/wp-content/uploads/2018/05/report-theplan-lessons-learned-2018.pdf>

HOUSING IN WALKUPS

27. Banerjee, A. and Shands, Y. "Comparison of Estimates of Residential Property Values." (January 27, 2017) Prepared for RedFin by SSRS. Available online at: <https://www.redfin.com/blog/wp-content/uploads/sites/5/2017/02/Findings-Report.Final-Draft.Revised.2.2.17-FINAL.pdf>
28. Yardi Matrix researches and compiles static and dynamic 50+ apartment market data specific to individual apartment properties. Asking rents are obtained using human field research staff approaching leasing offices as potential tenants.
29. Porter, E. and Gates, G. "Why Workers Without College Degrees Are Fleeing Big Cities." (May 21, 2019) New York Times. Available online at: <https://www.nytimes.com/interactive/2019/05/21/business/economy/migration-big-cities.html?searchResultPosition=2>
30. "Housing Underproduction in the U.S.: Economic, Fiscal and Environmental Impacts of Enabling Transit-Oriented Smart Growth to Address America's Housing Affordability Challenge." (2018) Up for Growth, Holland Government Affairs, and ECONorthwest. Available online at: https://www.upforgrowth.org/sites/default/files/2018-09/housing_underproduction.pdf
31. "Quarterly Residential Vacancies and Homeownership, First Quarter 2019." (April 25, 2019). U.S. Census. Available online at: <https://www.census.gov/housing/hvs/files/currenthvspress.pdf>

SOCIAL EQUITY RANKINGS

32. "Economic News Release: Consumer Expenditures – 2017." (September 11, 2018). Bureau of Labor Statistics. Available online at: <https://www.bls.gov/news.release/cesan.nro.htm>
33. Ibid.
34. Edmonds, E. "Your Driving Costs." (September 3, 2018) AAA. Available online at: <https://newsroom.aaa.com/auto/your-driving-costs/>

CORRELATIONS & FINDINGS

35. "Core Values: Why American Companies Are Moving Downtown." (2015) Washington, DC: Smart Growth America. Available online at: <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/a/326/files/2016/12/Why-American-Companies-are-Moving-Downtown-1eu2kmg.pdf>
36. Berube, Alan. "For Amazon, HQ2 location decision was about talent, talent, talent." (November 13, 2018) Brookings Institution. Available online at: <https://www.brookings.edu/blog/the-avenue/2018/11/13/for-amazon-hq2-location-decision-was-about-talent-talent-talent/>.
37. Abel, Jaison and Todd Gabe. "Human Capital and Economic Activity in Urban America." (February 2010) Federal Reserve Bank of New York Staff Reports, staff report no. 332. Available online at: https://www.newyorkfed.org/mediaLibrary/media/research/staff_reports/sr332.pdf

Endnotes

PHOTO CREDITS

1. Castro Neighborhood in San Francisco, gérard, Flickr, Creative Commons BY-SA 2.0
2. Friendly Neighborhood in CA, La Cita Vita, Flickr, Creative Commons BY-SA 2.0
3. Painted Pedestrian on Street, Thomas Hawk, Flickr, Creative Commons BY-NC 2.0
4. Orange Line Opening in Portland, OR, Photo courtesy of TriMet
5. H Street in D.C., angela n., Flickr, Creative Commons BY 2.0
6. Storefront in Easthampton, MA, Sven Kielhorn, Massachusetts Office of Tourism, Flickr, Creative Commons BY-ND 2.0
7. Schuylkill Banks Panorama, Montgomery County Planning Commission, Flickr, CC BY-SA 2.0
8. Sundance Square in Dallas, Lars Plougmann, Flickr, Creative Commons BY-SA 2.0
9. San Antonio Riverwalk, Alain Secretan, Flickr, Creative Commons BY-NC-SA 2.0
10. Park Slope Neighborhood in Brooklyn, Matthew Rutledge, Flickr, Creative Commons BY 2.0
11. Atlanta Streetcar at Auburn and Piedmont Avenues, Lauren Holley, Flickr, Creative Commons BY-SA 2.0
12. Des Moines Farmer's Market, U.S. Department of Agriculture, Flickr, Creative Commons BY 2.0
13. 14th and T in Washington, D.C.,
14. Brooklyn Bridge from DUMBO, svetiq, Flickr, Creative Commons BY 2.0

Center for Real Estate and Urban Analysis

THE GEORGE WASHINGTON UNIVERSITY

LOCUS



Smart Growth America
Improving lives by improving communities



CUSHMAN &
WAKEFIELD



YARDI

Acknowledgments

Thanks to:

Data Providers:

Center for Neighborhood Technology
CoStar
Redfin
Yardi Matrix

Individuals:

Michael Boonshoft, *Cushman and Wakefield*
Ed Fanselow, *Cushman and Wakefield*
Adrienne Fasano, *Cushman and Wakefield*
Revathi Greenwood, *Cushman and Wakefield*
Josh Kuriloff, *Cushman and Wakefield*
Daniel Michaelis, *GWSB*
Ken Schappelle, *GWSB*
Patricia Niles, *GWSB CREUA*
Sarah Cassius, *GWU*
Jason Shevrin, *GWU*
Christopher Coes, *LOCUS & Smart Growth America*
Tola Myczkowska, *LOCUS & Smart Growth America*
Stephen Lee Davis, *Smart Growth America*
Calvin Gladney, *Smart Growth America*
Michael Rodriguez, *Smart Growth America*
Christopher Zimmerman, *Smart Growth America*
Jack Kern, *Yardi Matrix*
Doug Ressler, *Yardi Matrix*

Graphic Designer:

Kristen Jeffers of *The Black Urbanist*

Research Partners:

George Washington University School of Business and CREUA

GW's School of Business is an international leader in education and research, which prides itself on training future leaders to be global problem solvers and socially responsible managers. The school leverages its prime location—in the heart of Washington—by attracting visiting scholars and leaders in the business community to work, teach and engage with students on campus. Visit: business.gwu.edu

The Center for Real Estate and Urban Analysis (CREUA) educates graduate, undergraduate and executive students while assisting them reach their career goals at the George Washington University School of Business. It also conducts influential research focusing on walkable urban place development and place management,

international real estate, and housing finance policy. Visit: creua.business.gwu.edu

Cushman & Wakefield

Cushman & Wakefield (NYSE: CWK) is a leading global real estate services firm that delivers exceptional value for real estate occupiers and owners. Cushman & Wakefield is among the largest real estate services firms with approximately 51,000 employees in 400 offices and 70 countries. In 2018, the firm had revenue of \$8.2 billion across core services of property, facilities and project management, leasing, capital markets, valuation and other services. Visit: www.cushmanwakefield.com or follow @CushWake on Twitter.

Smart Growth America/LOCUS

Smart Growth America envisions a country where no matter where you live, or who you are, you can enjoy living in a place that is healthy, prosperous, and resilient. We empower communities through technical assistance, advocacy, and thought leadership to realize our vision of livable places, healthy people, and shared prosperity. Visit: smartgrowthamerica.org.

LOCUS, Latin for “place,” is a national coalition of real estate developers and investors who advocate for sustainable, equitable, walkable development in America's metropolitan areas. Visit: smartgrowthamerica.org/program/locus/.

About Yardi Matrix & Yardi®

Yardi Matrix offers the industry's most comprehensive market intelligence tool for investment professionals, equity investors, lenders and property managers who underwrite and manage investments in commercial real estate. Yardi Matrix covers multifamily, industrial, office and self-storage property types. Visit: yardimatrix.com.

Yardi® develops and supports industry-leading investment and property management software for all types and sizes of real estate companies. Established in 1984, Yardi is based in Santa Barbara, Calif., and serves clients worldwide. Visit: yardi.com.