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UNIVERSITY OF MIAMI REAL ESTATE RESEARCH INITIATIVE

Commercial Real Estate Sentiment Survey

Emerging Trends and Perspectives on Resilient Development in South Florida

February 28, 2020

University of Miami Commercial Real Estate Sentiment Survey

Abstract:

The University of Miami conducted its second-annual survey on Commercial Real Estate Sentiment in South Florida during January 2020. The Real Estate Research Initiative was sponsored by the Masters in Real Estate Development + Urbanism (MRED+U) Program and engaged over 250 real estate industry professionals including the University of Miami's Real Estate Advisory Board members in the Architecture, Business, and Law Schools. The Advisory Boards comprise over 100 leading real estate professionals composed of developers, owners, investors, advisors, architects, engineers and brokerage/marketing professionals throughout South Florida. Respondents represent highly experienced professionals active throughout South Florida with 50% having 20+ years of experience and nearly 75% with 10+ years of experience in the market.

This study was developed to examine sentiments regarding the commercial real estate market in Miami-Dade, Broward and Palm Beach Counties from local real estate professionals on an annual basis and track changing perspectives over time. Respondents gave their perspectives regarding perceptions of and predictions for the market cycle in the respective counties, transaction volumes, key attracting and deterring factors for investment in South Florida, and strategies for different commercial asset types. Furthermore, this year's survey included a special focus on the real estate community's perspectives on resiliency and how to best incorporate resilient practices in real estate development in South Florida.

The research team included Dr. Charles Bohl, Director at the Master in Real Estate Development + Urbanism (MRED+U) Program; Mark Troen, FRICS, MRED+U Lecturer and Senior Vice President at Brookwood Group Inc; MRED+U Advisory Board member Anthony M. Graziano, MAI, CRE and Chairman / CEO at Integra Realty Resources; Anthony Williams, Special Projects Director at Bendixen & Amandi International; and a graduate student team from the University's Master of Real Estate Development & Urbanism program – Ryan Coffield, Caroline Cozzi, Chandler Davis, Nicholas Font, Troy Gulec, Samuel Herrera, Nicholas Nicola and Joseph Roque.

Key Findings:

This year's research study focused on gauging the South Florida real estate community's sentiments regarding resiliency in local real estate development, in addition to collecting insights regarding the state of the South Florida commercial real estate market. The findings obtained in this year's research study cover the following topics:

- **The South Florida Commercial Real Estate Market Today**
- **Drivers of Commercial Market Strength**
- **Key Drivers for Attracting Investment**
- **Direction of the South Florida Commercial Real Estate Market**
- **Resiliency in South Florida – Opportunities and Challenges**
- **Exploring “Climate Gentrification”**
- **The Future of Resilient Development in South Florida**

The South Florida Real Estate Market Today:

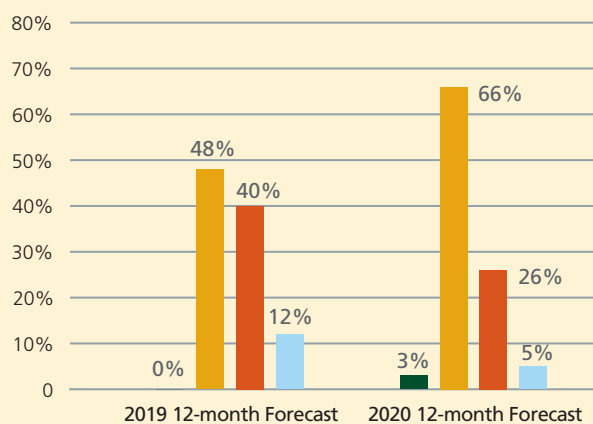
This year's survey respondents are overwhelmingly confident in the expansionary trajectory of the South Florida commercial real estate market in the coming 12 months, to a greater extent than the results recorded in our prior survey in 2019. In each of the three counties, the vast majority of respondents indicated these markets will continue to grow in the coming year.

Of note is that the number of respondents expecting a recession in the coming 12 months has dropped dramatically across the board by almost 50% (Miami Dade from 12% down to 5%; Broward from 10% down to 6% and Palm Beach from 10% down to 4%.) In Miami-Dade and Broward, a similar decline over concerns of hyper-supply and a corresponding uptick in the expansion market phase is noted.

If the magnitude of the results offer any indication of the market's true trajectory, Palm Beach and Broward County are expected to perform very well in 2020, with renewed optimism in the trajectory of Miami-Dade county over last year's results.

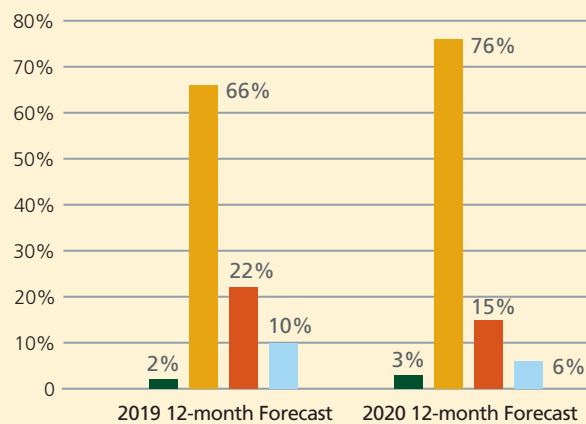
These perspectives correlate with later analysis of value growth and buy-hold-sell strategies since optimism over continued expansion help reinforce expectations of value growth and continued appetite for buying versus selling. Overall, dwindling concerns over a near-term recession or hyper-supply signal respondents' optimism about the South Florida commercial real estate market.

TABLE 1
Miami-Dade County

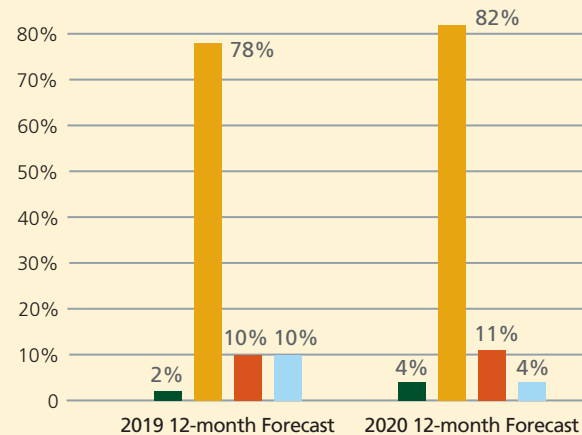


Key ■ Recovery ■ Expansion ■ Hyper-Supply ■ Recession

Broward County



Palm Beach County



Volume of Real Estate Transactions:

An indicator of the overall state of the commercial real estate market in South Florida is the volume of transactions, which indicates the overall level of activity in the market and the direction in which the market may be heading. Survey respondents overwhelmingly agree that the quantity of transactions is an indicator of market health, with 78 percent agreeing with the premise that transaction volume drives perceptions of market strength. The low number of responses contradicting help solidify transaction volume as an undisputed market indicator in South Florida commercial real estate.

Across the tri-county region, overall commercial transaction volume for all asset classes increased in 2019, indicating a strong state of the market consistent with an expansionary trajectory. In 2019, Miami-Dade led the region with over \$7.5 billion in commercial transactions, followed by Broward at above \$5 billion and Palm Beach at just under \$4 billion. While these are all higher than the respective volumes for 2018, Miami-Dade led in terms of the overall rate of increase, which was less steep for the other two counties.

However, in a market like Miami, known for investment of foreign capital, cross-border transaction volume diminished in 2019. In Miami-Dade, cross-border investment growth was fairly flat, hovering a bit above the approximately \$1.5 billion from 2018. In Broward and Palm Beach, cross-border volume dropped significantly, with such in the latter approaching \$0. This shift is in line with the strength of the United States Dollar and increased scrutiny regarding foreign investment in the United States. The overall transaction volume in 2019 was propped up by an uptick in domestic volume, particularly in Broward and Palm Beach, showing a growing influence of domestic capital in the South Florida commercial real estate market. The transaction activity in South Florida can be seen as primarily driven by domestic investment in the past year in all three counties.

TABLE 2
The volume of real estate transactions affects my impression of the commercial real estate market.

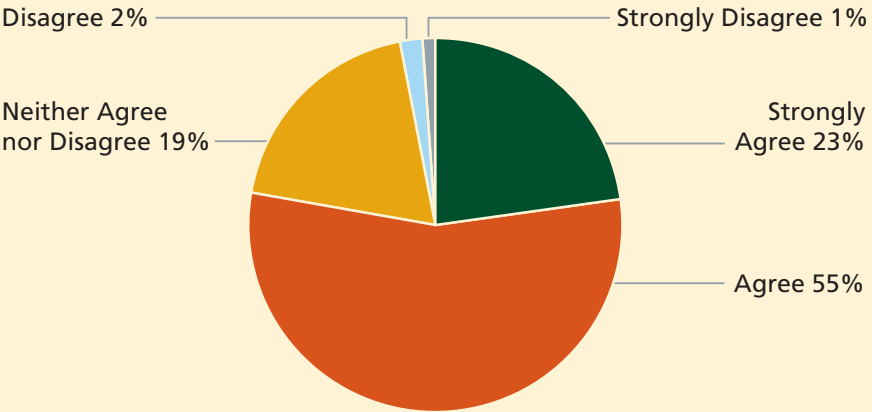
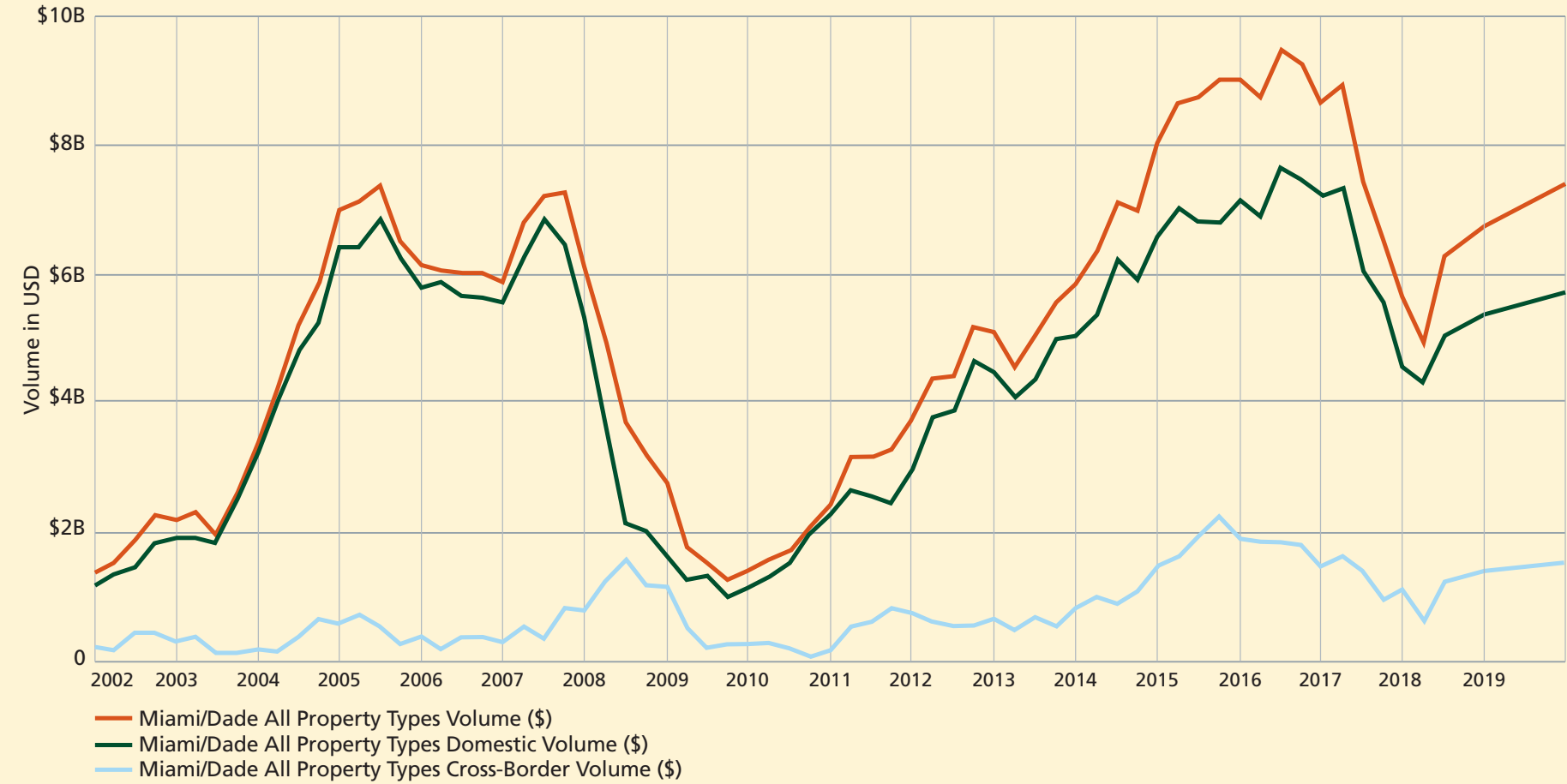
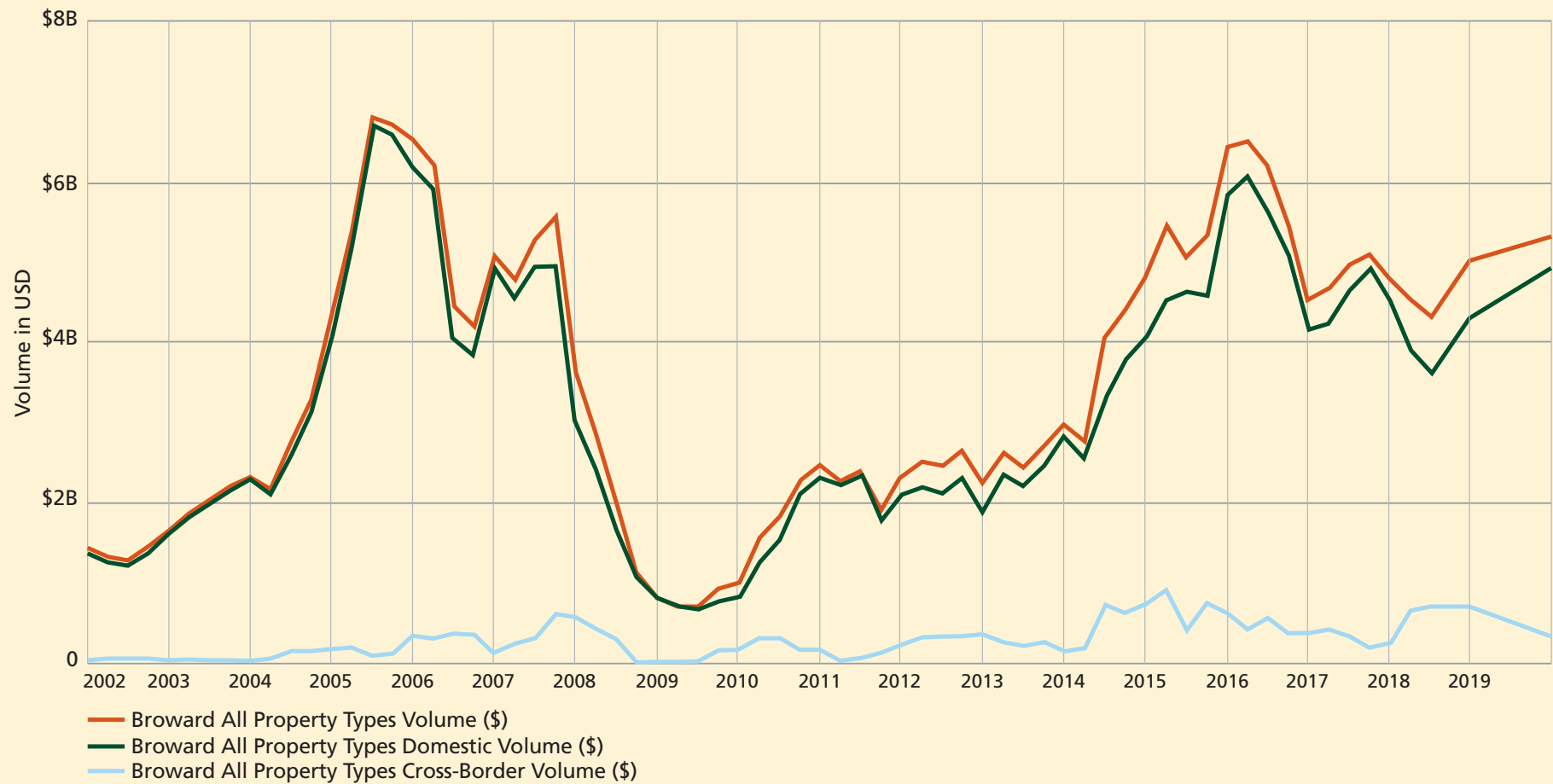


TABLE 3
Miami-Dade Commercial Transaction Volume – 2002-2019



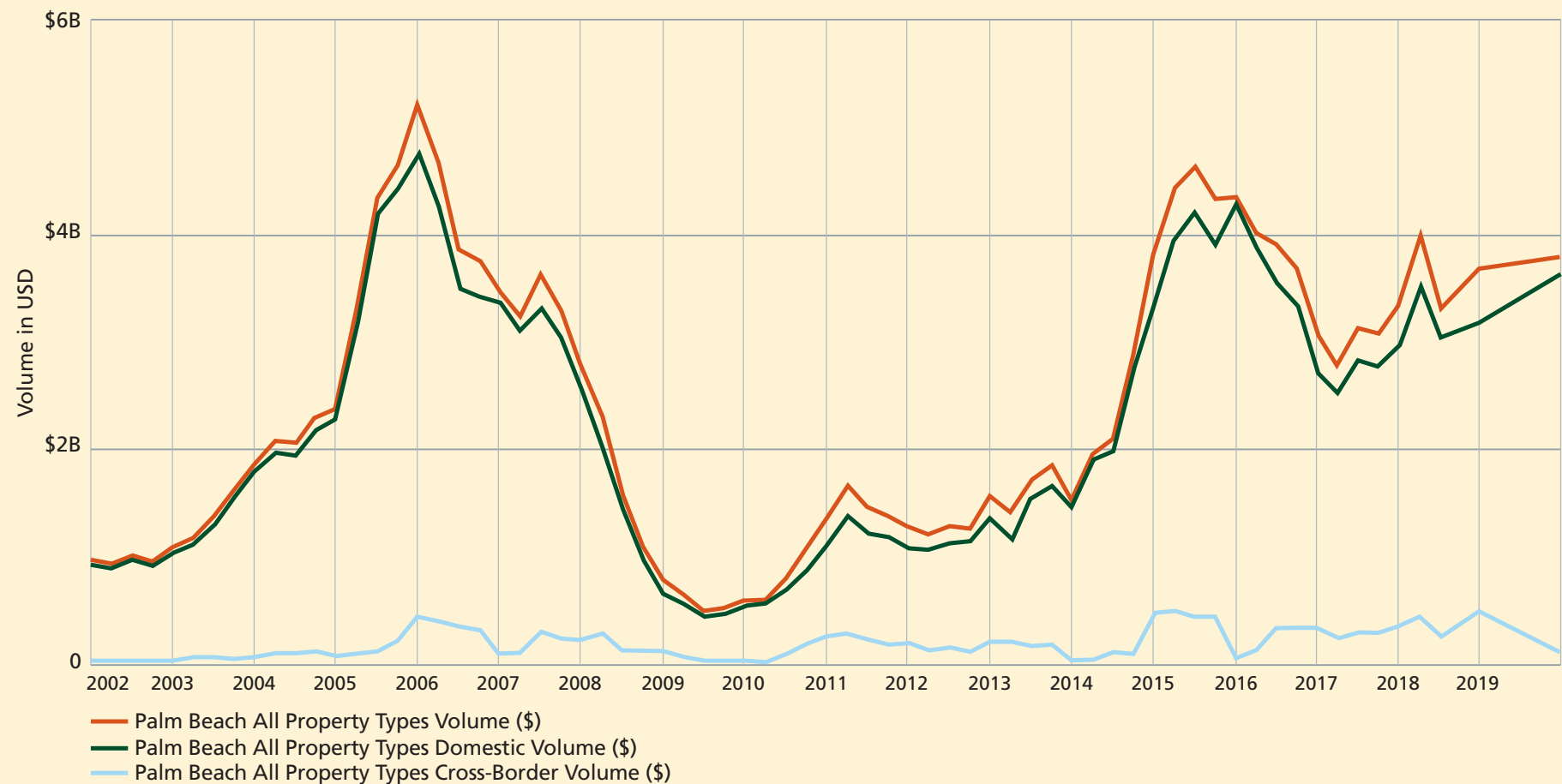
Price floor selections do not apply to Indices or Fundamentals data. Volume displayed as 12 Months Totals. Cap rates and PPU displayed as a 12 Month Average. Includes property or portfolio sales \$2.5 million or greater. Q4 2018 preliminary data.
Source: Real Capital Analytics (RCA)

TABLE 4
Broward Commercial Transaction Volume – 2002-2019



Price floor selections do not apply to Indices or Fundamentals data. Volume displayed as 12 Months Totals. Cap rates and PPU displayed as a 12 Month Average. Includes property or portfolio sales \$2.5 million or greater. Q4 2018 preliminary data.
Source: Real Capital Analytics (RCA)

TABLE 5
Palm Beach Commercial Transaction Volume – 2002-2019



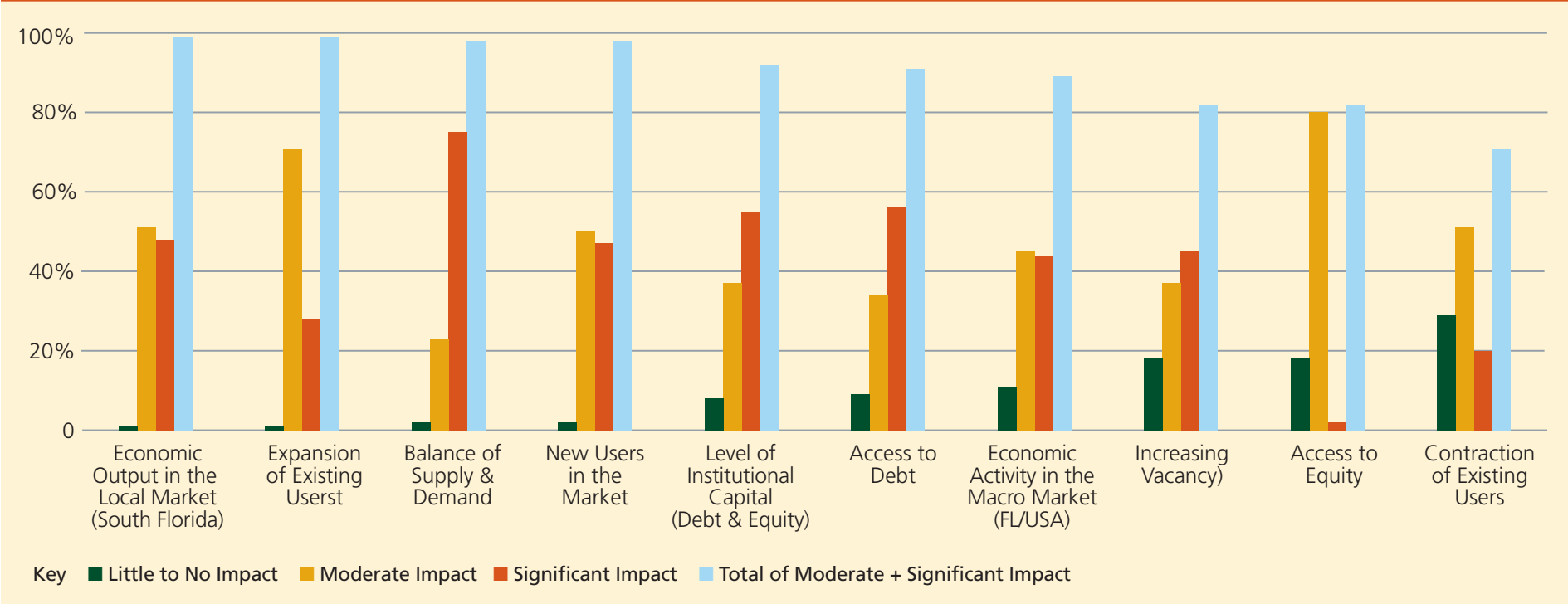
Price floor selections do not apply to Indices or Fundamentals data. Volume displayed as 12 Months Totals. Cap rates and PPU displayed as a 12 Month Average. Includes property or portfolio sales \$2.5 million or greater. Q4 2018 preliminary data.
Source: Real Capital Analytics (RCA)



Drivers of Commercial Market Strength:

The real estate professionals who completed the survey consider the balance of supply and demand, new users in the market, expansion of existing users, economic output in the local and macro markets, access to debt, and the level of institutional capital to be the most significant in determining economic market values. Furthermore, respondents answered that the contraction of existing users, increasing vacancy, and access to equity play a lesser role on the values within the local commercial real estate market.

TABLE 6
Rate the following factors for their impact on economic market values in commercial real estate:

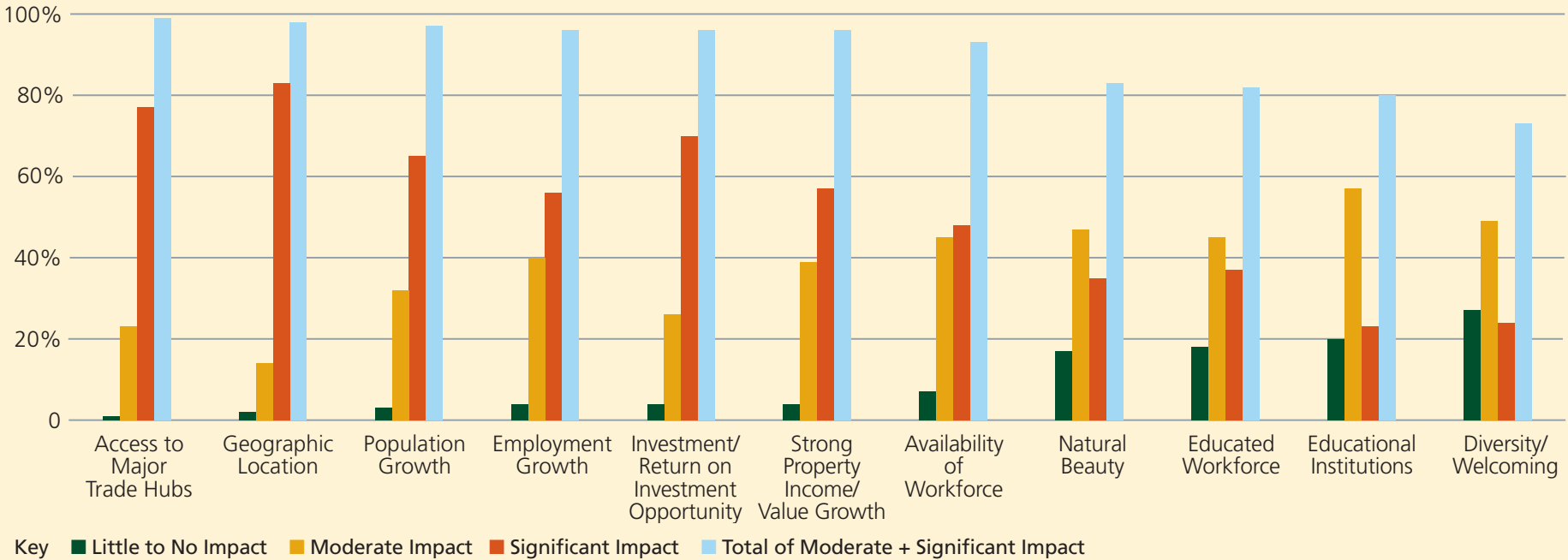


Key Drivers for Attracting Investment:

The top factors considered as primary reasons to invest included geographic location, proximity to major trade hubs, returns on investment, and population growth as the primary factors attracting investment to the South Florida real estate market. Clearly, South Florida’s location as a connection point to Latin America in terms of trade and investment truly set it apart from other markets within the United States.

Additionally, Florida now leads the country in net relocations, highlighting population growth in the whole state. As a result, this provides opportunities to invest with commercial real estate that caters to new arrivals, which further drives the South Florida market as an attractive destination for investment and solid returns. Diversity, natural beauty, the educational institutions, educational attainment of the workforce, workforce availability, and property value growth played less important roles in attracting investment.

TABLE 7
Please indicate how the following factors attract investors to commercial real estate in South Florida.

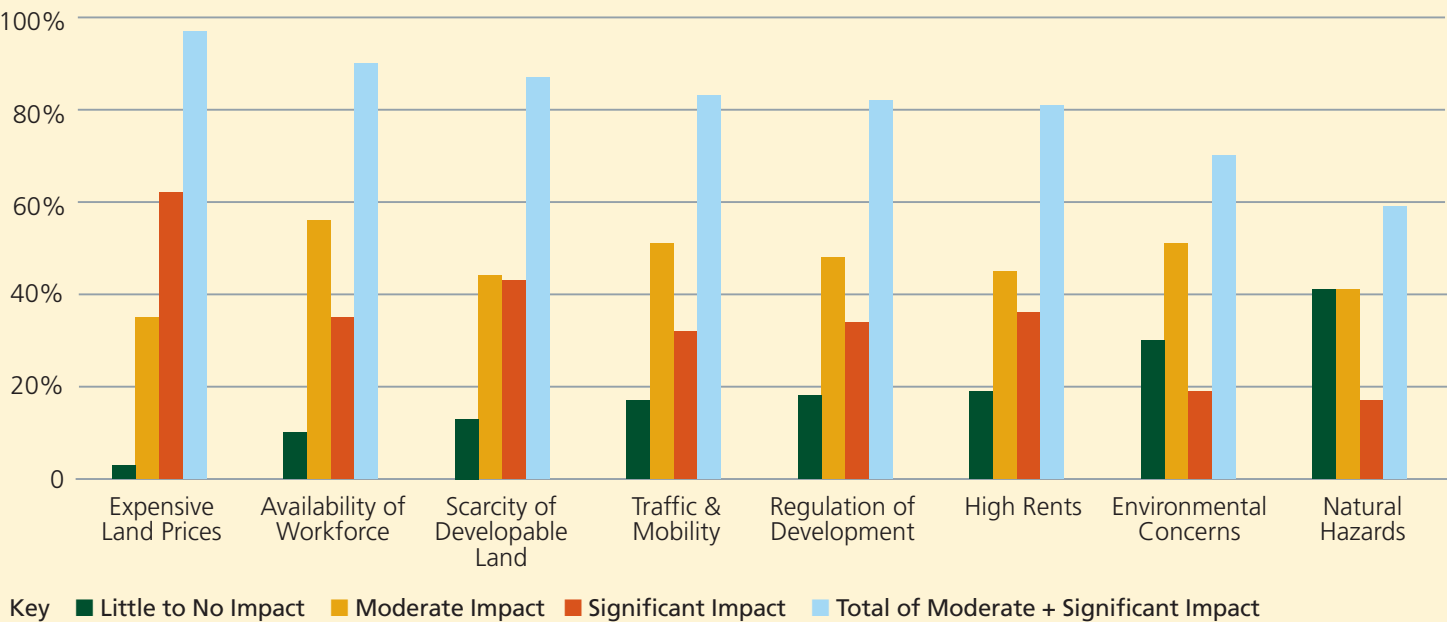


Key Drivers for Deterring Investment:

The high cost of land was resoundingly considered the top deterrent for investment, which is related to the high level of foreign investment in the real estate market and the fact that developable land in South Florida is scarce due to urban development boundaries imposed by geographic barriers. Other factors like high rents, traffic congestion, regulatory framework and workforce availability were considered to have some effects in dissuading investors from coming to South Florida.

Perhaps surprisingly, natural hazards and environmental concerns did not register as having significant impacts as deterrents for investment in this market. While the current risk of hurricanes and looming risk of sea level rise are definitely serious, investors do not consider them to outweigh the benefits of investing in South Florida at this time. These findings were very consistent with the 2019 survey results.

TABLE 8
Please indicate how the following factors deter investors away from commercial real estate in South Florida.



Direction of the South Florida Commercial Real Estate Market:

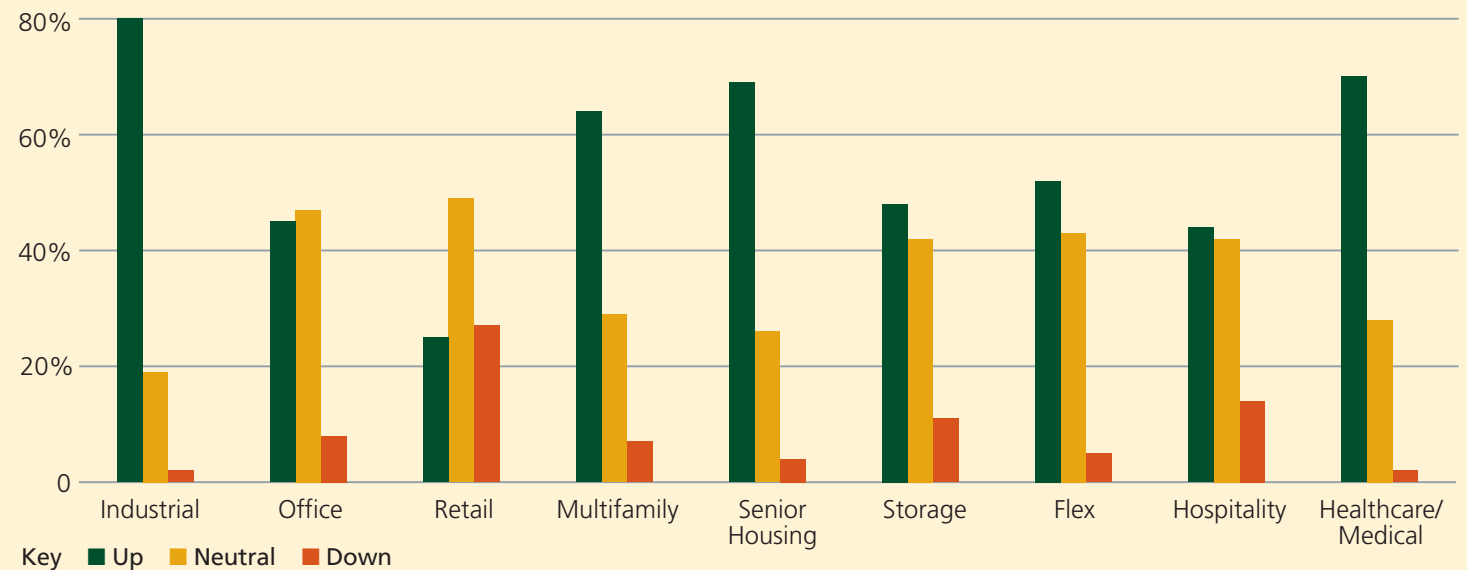
To conclude the market component of the survey, respondents specified their sentiments regarding where they considered values to be heading in the coming year (Table 9), and which buy-hold-sell strategy to pursue for varying commercial real estate classes in South Florida (Table 10).

Respondents in South Florida strongly believe values will grow in 2020 within the industrial, multi-family, senior housing, and healthcare/medical asset classes. Office, self-storage, and flex space results were mixed, with about half the respondents indicating growth and the other half expecting neutral (nominal) growth, all with fewer than 8% or less of respondents predicting value contraction.

The retail and hospitality classes were the only two where more than 10% of respondents indicated value contraction, with retail property being the most significant outlier in these graphs. Over 25% of respondents are predicting value contraction and less than 25% predicting value growth. This appears to reflect the continued disruption within the sector at the national level and some uncertainty for investment opportunities in South Florida retail for the year ahead as new inventory is absorbed and many existing centers are repositioning to incorporate mixed-use tenants.

TABLE 9

Of the following development types in commercial real estate, in which direction are values or prices moving?



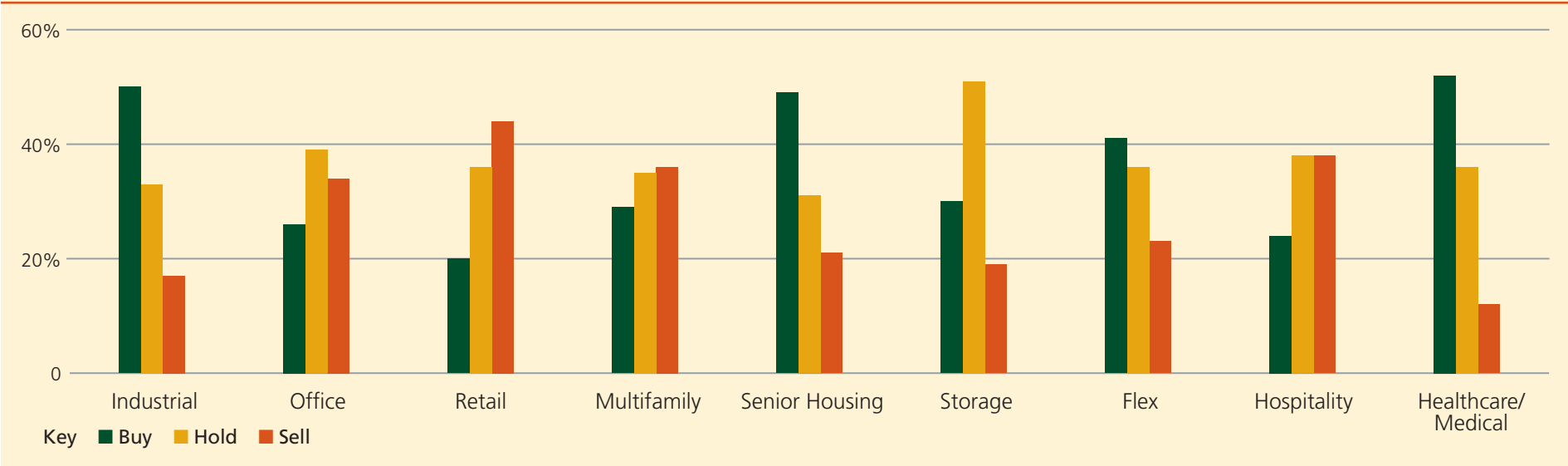
Buy, Hold, or Sell Various Asset Classes:

The professional sentiment on buy-hold-sell revealed the correlation between respondents’ ratings for value growth (Table 9), and their linear expectations that assets demonstrating value growth should be rated “buy”, and those with lesser prospects for value growth (or value contract) should be held or sold.

As a result, industrial, senior housing, healthcare/medical and flex all rated a dominant buy rating. Interestingly, this strong buy indication did not translate into multi-family perhaps signaling an inflection point where respondents believe multi-family may still have room for value growth but now may be a more opportune time to sell.

Retail, office and hospitality registered strong sell or hold ratings in the current market environment, with retail registering the lowest percentage of respondents recommending buy.

TABLE 10
Is now the time to buy, hold, or sell the following development types in commercial real estate?



Resiliency in South Florida – Opportunities and Challenges:

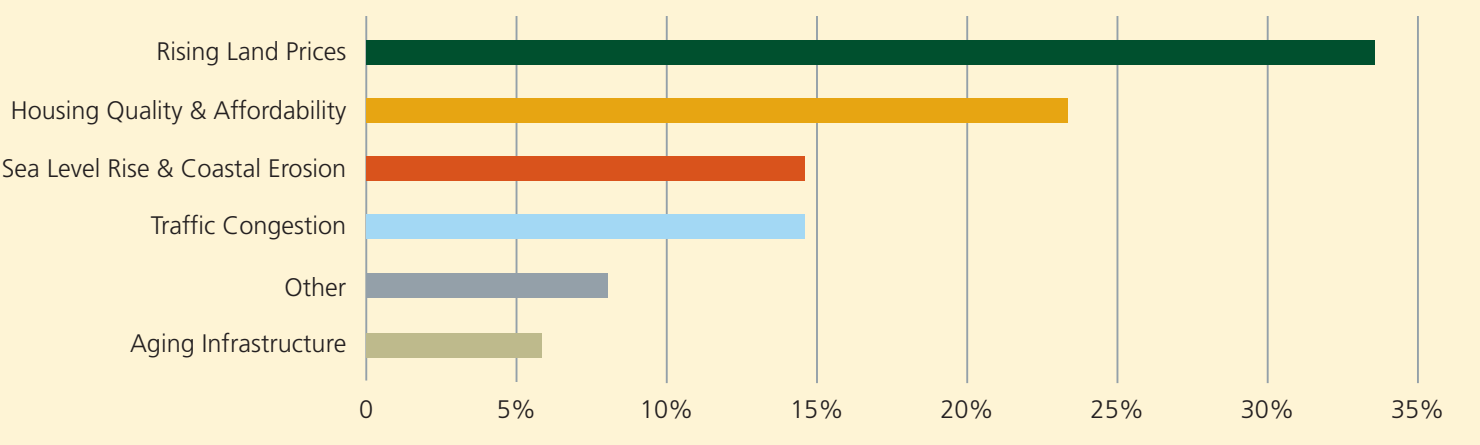
In addition to examining the commercial real estate market, this year’s survey focused on understanding how the South Florida real estate community perceives on-going public and private efforts to incorporate resiliency into real estate development in the region today. This is especially timely, given the overall context of global climate change and the unique set of challenges presented by the growing ESG (Environmental, Social, and Governance) investment movement and its potential affects on South Florida real estate investment.

Beyond the scope of the cyclical fluctuations of South Florida’s commercial real estate market, investors in commercial real estate in the region identified additional deterrents to their decisions to invest in the region. Of the provided categories, over a third of respondents consider rising land prices to be the primary deterrent to investment. These are exacerbated by ever-increasing demand in a market geographically confined by natural barriers with unique and vulnerable ecosystems, such as the Florida Everglades, Biscayne Bay and the Atlantic Ocean.

Additionally, just under a quarter of respondents selected housing quality and affordability, highlighting some level of concern about the state of the existing housing stock in the region and how local housing has become increasingly unaffordable for many locals, particularly in Miami-Dade County. Next, sea level rise and coastal erosion were considered a deterrent by just under 15 percent of respondents, and while this was the third-highest category, this ranking demonstrates that environmental resiliency has not yet become a primary factor in investment decisions, despite all the global media attention focusing on the issue. Finally, the state of public infrastructure and other issues were each only considered a problem by less than 10 percent each of respondents respectively.

TABLE 11

In your opinion, which of the following issues has the most prevalent impact on investment and development in South Florida?



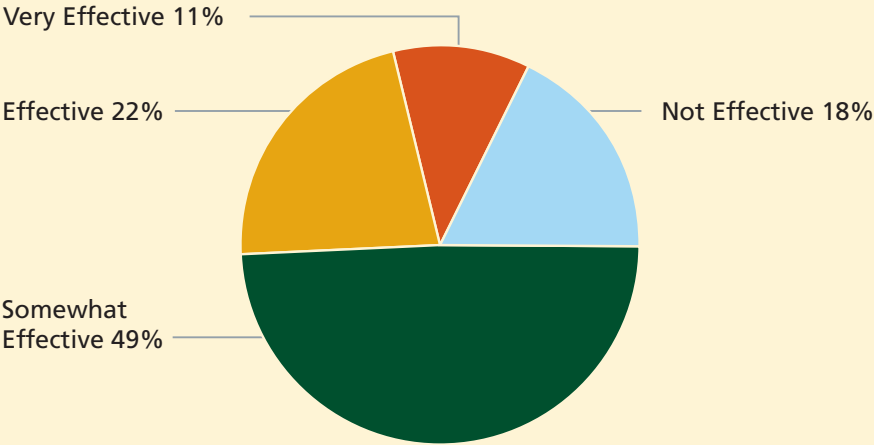
Impact of Resilient Design:

Over 80 percent of respondents consider that development practices incorporating resilient design have had at least some degree of success in adapting to current environmental and climate-related issues that affect the region. These practices include building codes to help structures withstand hurricanes, building seawalls, and raising infrastructure in low-lying areas.

However only one-third of respondents rate current measures as Effective or Very Effective, indicating there remains much room for improvement in resilient design and development.

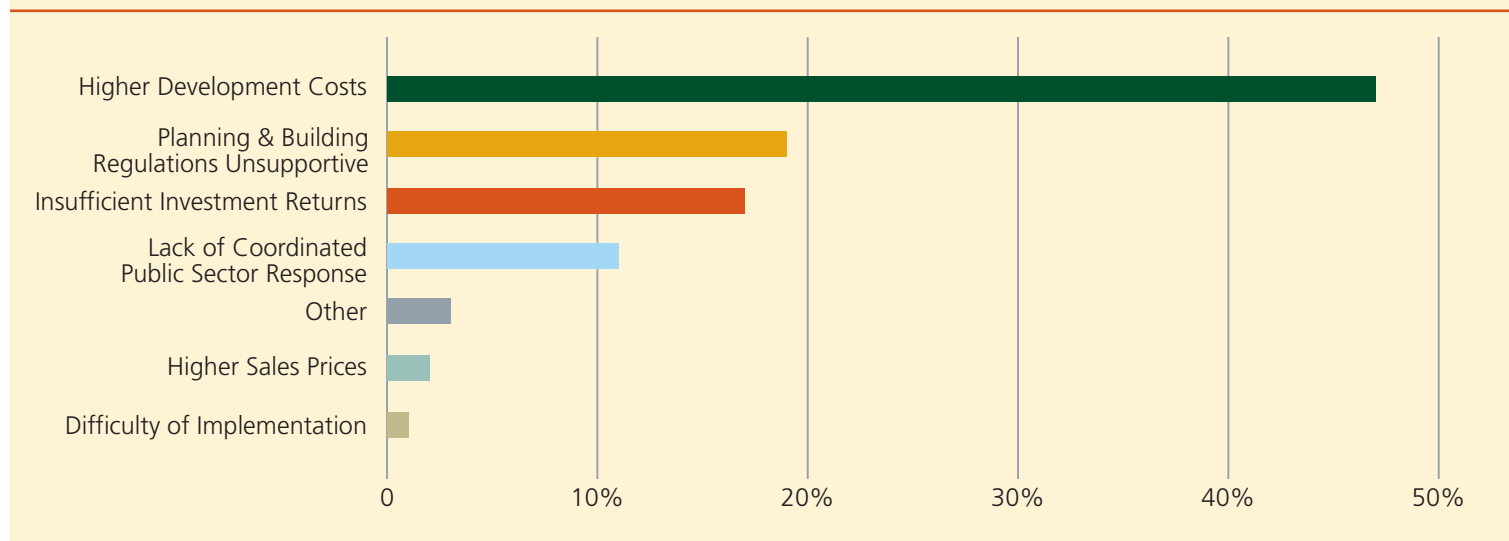
These results also indicate that real estate professionals in South Florida acknowledge the importance of resilient design in real estate development and some tangible levels of success in utilizing measures to protect the built environment.

TABLE 12
How effective do you believe resilient design has been to date in improving resilience of the built environment in South Florida?



Deterrents to Developing Resilient Real Estate:

The local real estate community acknowledges several challenges and barriers in the ability to execute and implement resilient design in existing and ground-up development of projects in South Florida. Just under half of respondents selected higher costs, which illustrates that project capital requirements are the primary impediment to resilient development today. The next challenge is the incompatibility of planning and building regulations with resilient design, such as parking requirements that foster overdependence on automobiles, among others. Related to higher costs, incorporating resiliency into development is considered to diminish returns on investment past the point of viability. Other identified challenges include the inaction by tiers of government in the region to properly respond to issues of resiliency, higher and increasingly unaffordable sales prices and the complexity of measuring successful implementation.

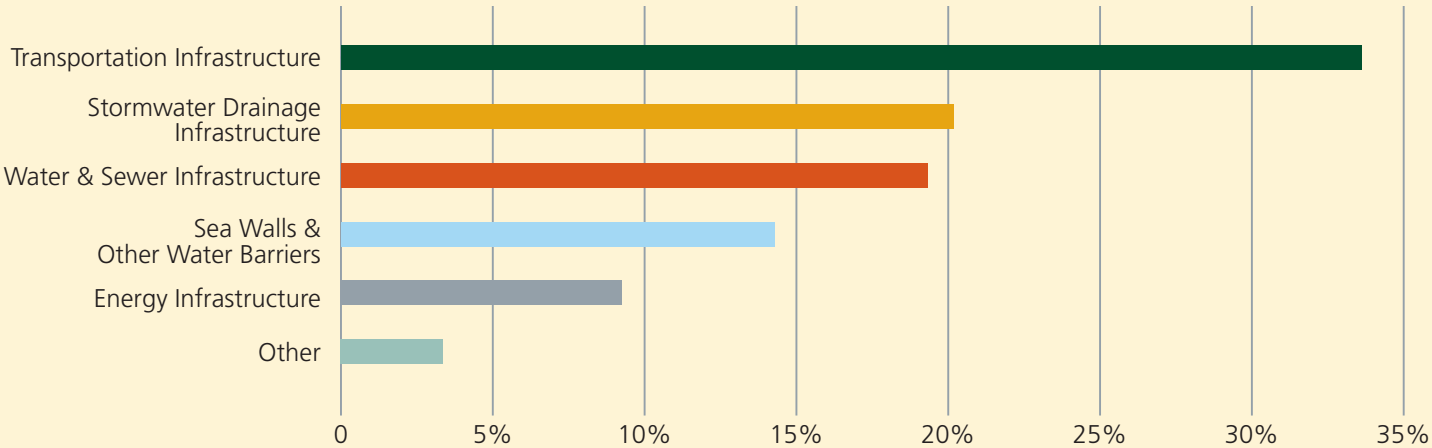
TABLE 13**What is the most significant barrier/deterrent to developing and adapting resilient real estate?**

Budgetary and Cost Factors Affecting Resilient Development:

Exploring the issue of cost as an obstacle for resilient real estate development, a third of respondents selected transportation infrastructure as the most costly component of fostering resilient and sustainable living in South Florida, stemming from the inadequacies and limited geographic reach of non-vehicular transit and walkable environments today in the region.

The upgrading of public utility infrastructure – namely utilities such as water/sewer/stormwater – is perceived to be the next most costly component of ensuring resilient design as these need to be adapted to foster efficient and sustainable uses of water and to handle drainage of more severe rain and storm surge-related events sparked by climate change. Just under 15 percent chose sea walls/water barriers as the most costly component, which brings attention to the fact that these are already present in the region and can continue to be implemented at a relatively lower cost than some of the other specified alternatives. Rounding out the list were improvements to energy infrastructure (such as hardening distribution and rebuilding at-risk facilities) and other miscellaneous infrastructure.

TABLE 14
Excluding building infrastructure, what do you believe is the most costly component of making a community resilient and sustainable?



Impact of Land Use and Building Regulations on Resilient Development:

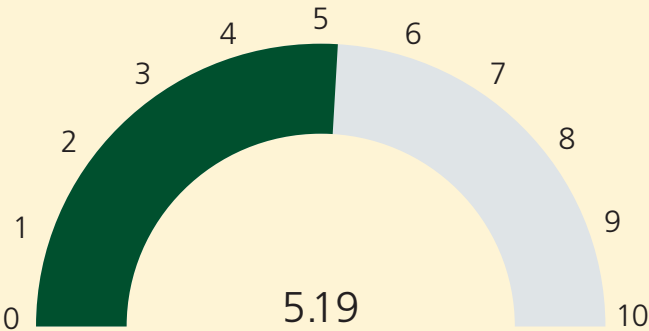
Existing land use ordinances and building regulations in South Florida appear to be both fostering and impeding resilient development.

Using a 1-10 scale, respondents ranked these as somewhat accomplishing both: mandates do compel developers to consider how to incorporate resilient practices in their proposed developments, but bureaucratic hurdles oftentimes prevent them from fully and successfully executing these changes.

Despite the challenges, resilient design within real estate development in South Florida is increasingly a factor in more and more projects. While investors may not view expected climate threats such as sea level rise as an immediate deterrent for the region, resilient design in development, including strong building codes to withstand hurricanes and seawalls to mitigate seasonal high tides, is already a reality in the region stemming from the intersection of South Florida’s geography and climate.

However, the overall cost of fully retrofitting and developing sustainably along with the inadequate responses by the public sector is considered to be an impediment to the level of resiliency required to confront future potential climate-related challenges.

TABLE 15
In general, are current land use and building regulations encouraging more resilient development, or impeding it? (Mean results on a 1-10 scale):

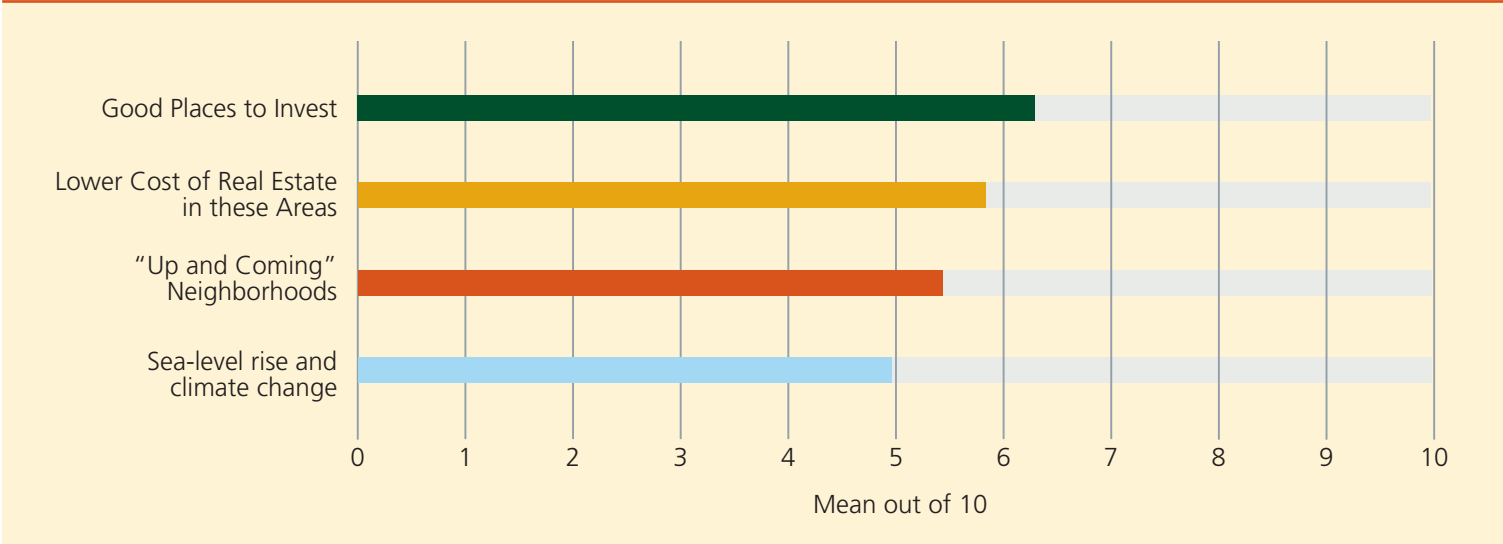


Exploring Climate Gentrification:

As sea level rise has become a more prominent topic in the national media, some local and national observers consider the natural threat to be driving a wave of investment and displacement in historically disadvantaged areas in the three counties that are located at higher elevation as part of a phenomenon that has been popularly denoted as “climate gentrification.”

However, when asked to examine the influence of this trend on a 1-10 scale, climate-related threats were ranked lowest, at just under 5 out of 10, while factors like location settings ideal for investment due to lower real estate values and perceptions of positive neighborhood transitions all ranked above average. The real estate community, particularly in Miami-Dade, believes that certain areas out of favor in previous cycles now provide investment opportunities to explore new neighborhood dynamics where property is less expensive. Based on these responses, the fact that these areas are located at the Miami’s highest elevations appears to simply coincide with a long-term pattern of investment moving inland from expensive and highly developed coastal areas and beyond booming neighborhoods like Wynwood, Edgewater and the Design District in Miami into the next contiguous areas.

TABLE 16
To what extent is investment and development in higher elevation areas of South Florida being influenced by the following factors?

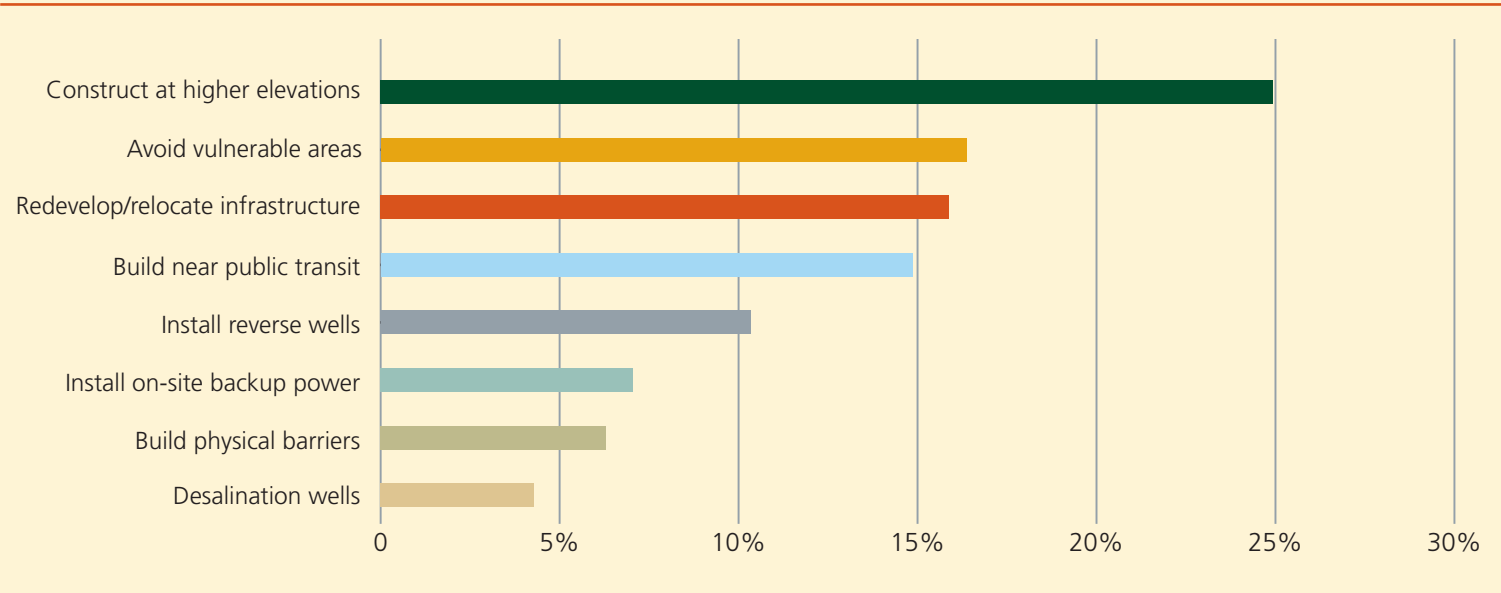


The Future of Resilient Development in South Florida:

Real estate professionals were asked their views on what they considered to be the most effective physical methods to foster future resilient development in South Florida. Within the defined categories, over half of respondents indicated the need for a shift in the development paradigm to building at higher elevations, avoiding low-lying and flood-prone areas, and choosing subject properties to develop in close proximity to existing transit corridors.

The remaining responses cluster around adaptations to existing developments and structures to help withstand the effects of climate change, such as infrastructure relocation, reverse wells to pump stormwater into aquifers, on-site back-up generators for hurricane recovery, sea walls and physical barriers, and desalinization wells. The results show that most respondents consider a proactive strategy to be an important component of resilient design, portending a change in the overall focus for development in South Florida.

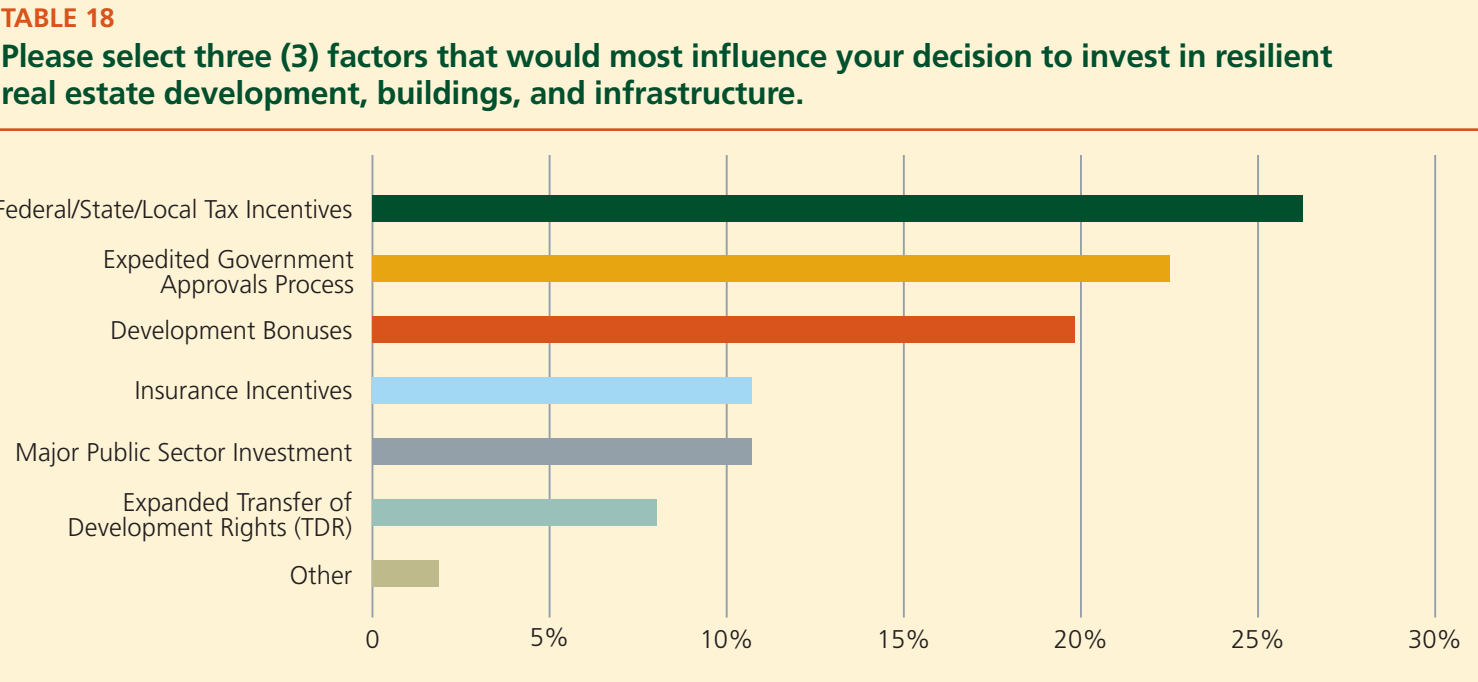
TABLE 17
Please select the three (3) most effective physical approaches to improve resiliency:



Approaches to Improve Resiliency:

Respondents were also asked to select their top three approaches to facilitate funding of resiliency in development and infrastructure in the region. The resounding majority chose initiatives from all tiers of government, namely in the form of tax incentives, expedited approvals, bonuses for increased development potential, direct public investment, and a broader transferable development rights (TDR) marketplace, among others.

South Florida’s real estate community firmly believes that resiliency must first be promoted by government via an overhaul of the fiscal and regulatory framework for development and that incentives are critical to making resilient real estate development feasible and profitable.

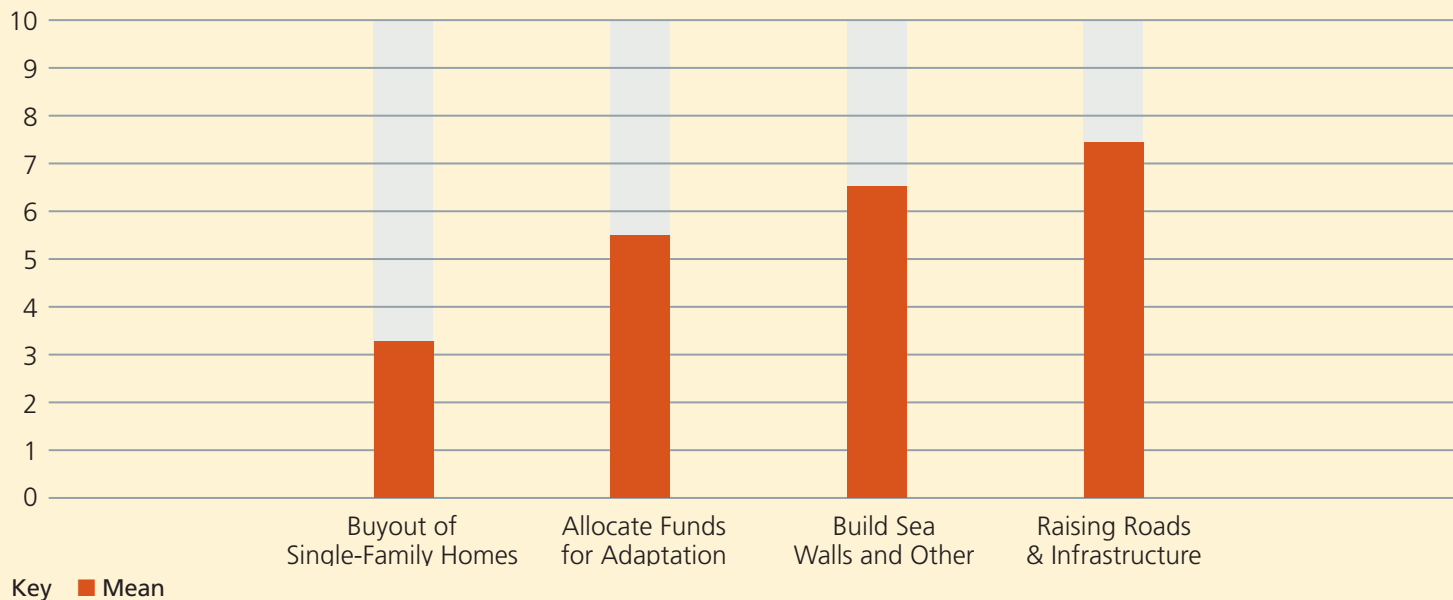


How to Pay for Resiliency Improvements?

To further analyze specific adaptive approaches to resiliency in the region, the surveyed professionals were asked to rank their investment in four key strategies. On a scale of \$0 to \$10 billion, adapting roads and infrastructure to higher elevations received the highest consideration, with a mean response of over \$7 billion. At just over \$6 billion, the next highest response was the construction of sea walls and other infrastructure to address sea level rise, storm surge and seasonal tides, followed by the expenditure of funds to support building adaptation with a mean value of \$5.5 billion.

Since the first three strategies were clustered with similar values, they can be considered as a group to be a favored approach to reconfigure the existing built environment. However, the buyout of single-family homes was allocated a mean value of \$3 billion, which illustrates its lack of popularity as a resilient development mechanism at this time.

TABLE 19
If you could direct \$10 billion to improve resiliency in South Florida, what would your priorities be? (Mean results on a 1-10 scale):

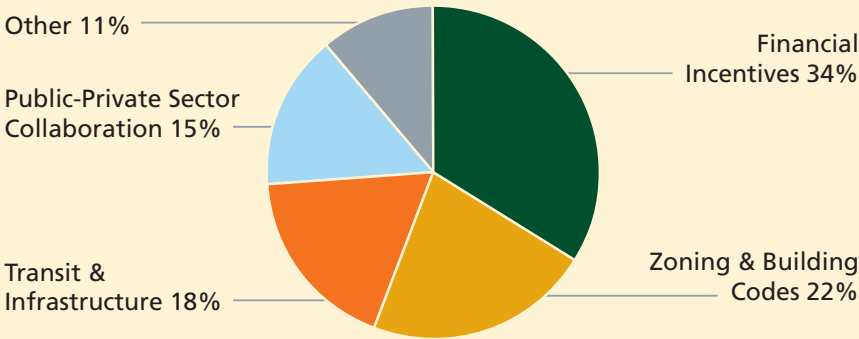


Suggested Solutions to Foster Resiliency by both Public and Private Sectors:

To conclude the survey, respondents were asked an open-ended question as to what efforts by the private and public sectors would foster resilient development in South Florida. Given the opportunity to provide their own insights, a majority focused on how both the private and public sectors could work towards a more resilient built environment for the future in South Florida. Thirty-four percent of respondents agreed that some amount of public sector financial incentives should be provided to developers to incorporate to resiliency implementation into their projects and to mitigate the costs related to such improvements. This was in line with previous responses regarding cost as the main deterrent (see Table 13).

Next was the need to reform zoning and building codes, highlighted by 22% of the responses, as critical to fostering improved resiliency. Following were comments on investments in transit and infrastructure, rated by 18% of the respondents as key improvements that could be undertaken by the public sector. While this approach was often identified as being the most costly, real estate professionals considered a focus in this area as vital to regional health and resiliency. Finally, public-private sector collaboration was deemed essential by another 15% of the respondents, which reinforces and amplifies the other responses by survey participants.

TABLE 20
What efforts by the private and public sectors would foster resilient development in South Florida?
Please provide us with your thoughts on this important issue.



Suggested Solutions to Foster Resiliency by both Public and Private Sectors:

The survey results indicate an overall consensus regarding the serious need to develop resiliently in South Florida in the future and to adapt the existing built environment to be able to properly withstand the effects of climate change. Respondents identified the need to intentionally design and develop at higher elevations and near transit corridors as a primary approach to resilient development, with adaptations such as raising streets and building sea walls taking a secondary position.

In executing these courses of action, however, respondents cited the increased financial burden and limitations of current zoning restrictions and building codes as being the main impediments. To address these, the professionals surveyed agreed that the public sector needs to provide incentives to foster resilient real estate development and reframe the regulatory framework to truly make resilient development the standard in South Florida.

Appendix: Respondent Insights

The survey closed by asking participants to provide their thoughts on what efforts by the private and public sectors would foster resilient development in South Florida. Following is a sampling of responses grouped by topic and focus:

Financial Incentives

- Public sector support for private initiatives including tax abatements on resilient development components.
- Fund research on the best practices for managing water and sea level rise for South Florida's unique geology and geography.
- Create local and statewide tax incentives and funding mechanisms for investing in resilient infrastructure and development.
- Public sector needs to encourage private sector to do so through incentives. These incentives could take many forms but there needs to be a way for the developer to defray some of the resiliency costs as resilient buildings are more expensive to build. These resilient buildings often do not command a large enough rent premium to offset the additional cost of the resiliency improvements. Until this is in balance it will be tougher to get max resiliency from developers.
- Soft money or subsidies to support resilient development. Impact fees are a large part of any development budget coupled with excess development costs to deal with resiliency typical result in a project that won't pencil. The city/county needs to align themselves with developers on this topic.
- Private Sector "certification" process similar to LEED demonstrating the "LEVEL" of resilience; combined with local tax incentives and insurance incentives for buildings that achieve certification levels.
- Tax credits and advanced depreciation from public sector; expanded entitlements is safer zones for developers.
- There needs to be incentives provided to the Developer. Given that ever-increasing land prices and construction cost are steadily out-pacing any rental rate growth, feasibility of development remains a challenge in So. Florida. Add to that further costs for resiliency initiatives and the result is many developments will not succeed, BUT FOR incentives. Increased density is generally an effective and easy option, but when you already have enough density by right, there needs to be additional/ alternative incentives, e.g., expedited entitlement and review processes, building/impact fee credits, tax incentives.
- Public: Investment in hardened infrastructure. Private: Tax incentives for upgrades to existing structures.
- Creation of financial incentives to redevelop or retrofit existing properties to more sustainable developments. Today's financial cost of these incentives will be far less than having to come up with dollars after a catastrophic event.
- Local governments need to take action and properly incentivize future developers to implement sustainable means for sustainable development. Whether that's in the form of local and state tax credits/refunds, expediting building permits and approvals, or other benefits that encourage this type of future building. We cannot afford to waste more money on studies and manuals, the time to implement programs is now.
- Economic incentives via tax reductions, insurance discounts, zoning flexibility.

Appendix: Respondent Insights – continued

- In order to promote resilient development there needs to be both public and private cooperation. The public (local/federal govt.) needs to raise funds through issuance of bonds and taxes. Private entities need to be responsible for their development's impact as well.

Transit & Infrastructure

- The private sector will follow codes and requirements as directed by local and national government. Local and national governments responsibility should be for effective planning and infrastructure solutions. Incentives of all types should be explored such that private developments can withstand resiliency factors that are imposed on new buildings.
- Look at innovative civil engineering solutions.
- Local government needs to take a leadership role in effectuating positive changes which will elevate buildings and other infrastructure, and create added walls and sea rise deterrents to our existing communities. Safety is paramount for all of those living in these areas prone to flooding. That being said, the costs would be enormous so expect politicians to stick their heads in the sand and pretend that they have no role in this massive disaster coming around the corner given that the public will ultimately face substantial tax increases in order to pay for everything.
- Coordinated infrastructure planning and funding. Infrastructure includes roads, water, sewer, drainage, seawalls, sidewalks, etc. Creatively leverage private resiliency investment with public dollars/incentives to get the biggest impact.
- The public sector needs to focus on transit first and foremost. Secondly, more attention needs to be paid to stormwater master planning, with assessments based on the best available and most relevant data for rainfall, groundwater saturation, and sunny day flooding of neighborhood streets. The private sector needs to start demanding updated land development codes that reduce parking, disincentivized surface parking lots, and allow for green and grey infrastructure. Finally, the Miami-Dade Division of Environmental Resources Management (DERM) regulations need to be revised to more easily implement green solutions.
- Incentives for developing not just green but blue infrastructure is key. South Florida is threatened by a variety of factors beyond sea level rise including but not limited to coastal flooding (king tides), storm run off, rainfall, ground water rise, etc. 3P efforts need to include working with utility companies as well the harden our aging infrastructure. Notice the increase of sewer pipe ruptures as of late. The salinity in our water table is deteriorating our infrastructure.
- Since a resilient real estate community in South Florida is one that invests, develops and maintains sustainable buildings and environments in the face of forecasted climate change, sea-level rise and other inescapable event-specific impacts of water and wind, the private and public sectors in South Florida must urgently adopt a paradigm shift in thinking about real estate development in South Florida. The recorded and predicted changes associated with climate change and event-specific impacts are becoming existential threats to the continued viability of a resilient South Florida real estate community. However, efforts by the private and public sectors should exploit and take full advantage of these new environmental realities. The South Florida area should become the undisputed global leader in creating new forms of infrastructure, building designs, new sustainable materials, community planning, etc., that take seriously the catastrophic events associated with climate change. Supporting policies that promote solar energy offer several benefits that would miraculously transform the general perception of the South Florida region and, thereby, enhance its real estate resiliency.

Appendix: Respondent Insights – continued

- Second, the private and public sectors should pursue policies that will encourage improvements in the quality of life in South Florida. Traditional fragmented planning is not consistent with an ecological style of living that stresses more harmonious habitation with the local environment. Furthermore, the lack of an efficient and dependable mass transit system is similarly counterproductive to maintaining resiliency in South Florida real estate.
- Third, the private and public sectors should take a more interdisciplinary approach to real estate development and pursue educational policies that would sustain efforts to cultivate technical and nontechnical innovations that are relevant for business growth. Visionary educational policies would create synergies favorable to growth.

Zoning & Building Codes

- A building code that specifies resiliency requirements for permits municipalities coordinating with FEMA and scientists to shape the zoning code around vulnerable areas. Prioritizing areas that are worth investing in for growth vs buybacks. Hurricane and floodproof new construction. Higher density zoning = less miles of sewage, water, roads and power infrastructure to maintain. This can be achieved with zoning incentives. Ensure that all drinking water and power utilities are fully resilient. Assess on a macro scale if and when the constant rise of flood insurance costs will eventually cause home owners to want to leave, even at a loss, and find a solution at the municipal level.
- There needs to be a unified approach area by area that is implemented, with cost effective measures. The Dutch have been building with these measures for year it requires commitment and investment by all parties. They have very similar issues. There needs to be a thought process for building a product that lasts for 50 years whereby you don't have to flee every time there is a hurricane.
- Create policy that awards development focused on carbon footprint reduction, development that focus on design that provides improved quality of living, development that participates in creating a sustainable community (i.e. walkable, community pride, healthy, safe).
- Mandated certification on resilient construction and adoption of resilient building codes.
- Greater collaboration between public and private sectors on overall goals for growth and change. Improved recognition of the issue by elected officials (many who are in denial about climate change and benefits of resiliency). Incentives for resilient development (whether zoning bonuses or adjustment of impact fees). Increasing public awareness of the issues (through marketing, planning, etc.). Focus on higher density in development (thereby minimizing infrastructure costs and creating opportunities to avoid sensitive and challenged locations).
- Density bonuses and/or other incentives like credits towards impact fees would help. Minimizing the time needed for permit approvals, as the carrying cost in waiting for such approvals may deter developers from maximizing resiliency efforts. Additionally, examining the Miami 21 code, specifically, parking requirements.
- In order for the public sector to foster resilient development, there needs to be policy changes. The public sector can also incentivize the private sector in many ways whether it is improving the permitting process, reducing the cost of impact fees, or allowing higher density development in designated areas.

Appendix: Respondent Insights – continued

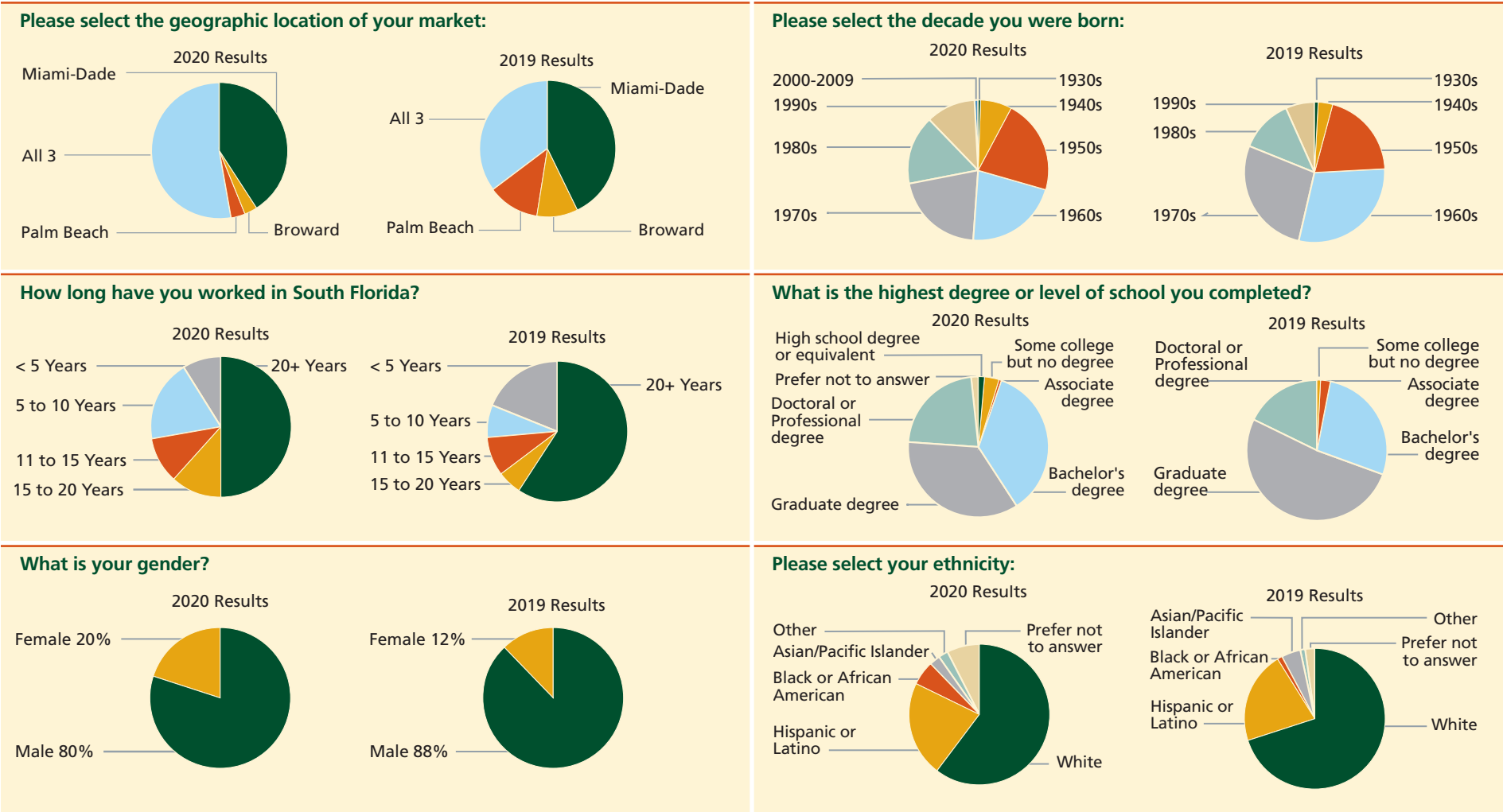
- The Private sector needs to work on the mentality of building to last. Many investors and developers here in South Florida build cheaply, they don't care because they don't plan on holding their buildings long-term. If construction standards were elevated, maybe everyone would have to start using better building practices, which will eventually lead to a more resilient city.
- Building codes, public awareness campaign, fix leaky sewer & water pipes, build with local materials, reuse/repurpose retrofitted older construction. Resilient & storm-resistant flora. Resilient internet access. Distribute school times & days & work schedules for health & reducing traffic concentration. More working & learning virtually not physically (reduce commute & gain more family time. Keep daylight savings time year-round – encourage family time & outdoor access in cooler evenings. Distributed pseudo-urban areas encouraging community-building & reduced travel in resilient areas.

Public-Private Sector Collaboration

- Public sector educating the private sector on the risks and quantifying the impact to be incorporated into an investment model. If the risk is high enough and the resiliency costs manageable enough, the market will price it in and investors will choose resilient development.
- More research, analysis and implementing a dedicated plan of correction.
- Public information and scientific dissemination of true facts in order to create a conscience of immediacy.
- Whatever the various efforts are, they should be coordinated between the public and private sectors, and public sector stakeholders should coordinate regionally.

Appendix: Methodology

The survey was distributed to over 1,000 professionals in the commercial real estate sector. 253 surveys were submitted, with 124 responses being fully completed and which formed the validated statistical basis for the survey results.



Appendix: Methodology – continued

This year's survey responses reflect a more diverse cohort – ethnically (nearly 1/3 non-white compared to about 1/4 last year); gender (20% female vs. 12% last year); and age-wise. While the majority of respondents (64%) were born between 1950 and 1979 (vs. 77% in last year's survey), there was a noticeable shift to younger survey participants born in the 1980's (about 30% vs. 20% last year).

Half of the respondents have more than 20 years of experience in South Florida, with another 25% having worked between 11-20 years in the region. Furthermore, a majority of the professionals work in all three South Florida counties. Educational attainment was similar overall in both years with over 90% having a bachelor's degree or higher, with a wider distribution this year to both undergraduate and post-graduate professional degrees.

To promote survey quality, respondents were assured their individual answers (and their participation) would remain anonymous.

For any additional information on the survey results or process, please email Natalie Bixby, Senior Program Manager, in the MRED+U graduate office (nbixby@miami.edu). She can direct inquiries to the research team as necessary.

The University of Miami: An Interdisciplinary Powerhouse in Real Estate

As one of the world's top markets for real estate development, South Florida represents an extraordinary setting for the study of real estate development. The University of Miami is unique in that it offers undergraduate and graduate programs in every field connected to the real estate industry and provides rich, interdisciplinary experiences for students that mirror the real world relationships between disciplines and professions.



The Master of Real Estate Development + Urbanism (MRED+U) program is an immersive one-year interdisciplinary graduate program that combines coursework in real estate development, finance, market analysis, construction, law, architecture, urban design and entrepreneurship. The prestigious MRED+U Advisory Board connects students with 60 industry leaders who are directly engaged in the program as lecturers, mentors and advisors, providing access to dozens of cutting-edge projects from every real estate sector, paid internships and employment. The program features a developer-in-residence program, sponsored case studies, a Capstone workshop, studio collaborations, extensive networking events and study abroad programs. MRED+U students collaborate with graduate students in Architecture, Urban Design, Construction Management, and Urban Sustainability & Resilience, and students enrolled in the Business and Law School's real estate programs.



The Miami Herbert Business School offers one of the top Real Estate MBA programs in the country. Designed for those who have already earned an undergraduate degree in business, this accelerated program begins each May and includes two paid internships. It brings together the school's strengths in management education with the University of Miami School of Architecture's strengths in architecture, construction management, real estate development and urbanism. Students get real-world, hands-on commercial real estate experience at two different commercial real estate companies. Past internships have been at industry leaders such as The Kislak Company, Lennar Commercial Real Estate and The Related Group. Students also receive mentoring and consult on a project with a real estate industry non-profit organization. MBS also sponsors and hosts the Annual Impact Investing in Commercial Real Estate Case Competition.



The School of Law offers an LLM degree in Real Property/ Property Development. The Law School offers the oldest LLM degree in the nation dedicated to the study of Real Property Development (RPD), and is widely regarded as the nation's best. The RPD degree is available on campus and in an online format that offers both innovation and academic excellence. For thorough preparation and to reflect the issues most relevant to practitioners, the Real Property Development LLM program is organized into four components: regular (foundational and elective) courses, concentrated courses, internships, and site visits. These course offerings enable students to develop an understanding of land acquisition, finance, regulation, tax law, construction law, residential and commercial development, landlord-tenant issues, closings, negotiation, and planning strategies.

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