Cornell Real Estate REVIEW

Volume 17 | 2019

The Baker Program

WX New York Women Executives in Real Estate, Alumni Highlights, International Trek: Shanghai, Domestic Trek: LA

The RE Industry

Cornell RE Conference Recap, Hodes Weill & Associates Institutional Real Estate Allocations Monitor

Research Articles

Coworking, U.S. Energy Boom, Student Housing, Opportunity Zones, Modular Construction, Middle East Tourism, Finance For Modular Housing

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Editorial Board

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Letter from the Editors

DEAR READERS,

The Editorial Board of the *Cornell Real Estate Review* is pleased to present Volume 17 (2019). Under the direction of the Baker Program in Real Estate, the *Review* is a student run publication founded in 2002 as a forum for faculty, professionals, and real estate students to focus on the interdisciplinary nature of real estate. The *Review* covers a broad range of issues from various real estate fields including design, business economics, engineering, finance, law, planning, development, marketing, and property management. The publication blends informative articles on real estate practice with application-based academic research.

This year's volume includes articles spanning several emerging or fast-changing areas in real estate both domestically and abroad.

Cornell Real Estate Women Highlight: WX: New York Women Executives in Real Estate; Alumna Highlight: Jiwon Park; Alumnus Highlight: Ravikanth Pamidimmukkala; Case Competitions; International Baker Program Trek: Shanghai; Domestic Baker Program Trek: Los Angeles; 36th Annual Cornell Real Estate Conference Recap; 2018 Institutional Real Estate Allocations Monitor; A Taxonomy of Coworking Space: Manhattan, NYC; Tailwinds on the U.S. Gulf Coast: How the Boom in U.S. Energy Production Is Creating Opportunities for Real Estate Investment; The U.S. Student Housing Market: Overlooked Opportunities; Opportunity Zones And New Orleans: A Chance For Affordable Housing Growth; Modular Construction: A Solution To Affordable Housing Challenges; Rising Tourism in Saudi Arabia: Implications for Real Estate Investment; The Hurdles To Financing Modular Development. In addition to this publication, the *Review* staff has published weekly blog articles touching on technology, international real estate, and current events (http://blog.realestate.cornell.edu/).

Fifteen Baker Program graduate students, with the assistance of two advisors, share responsibility for publication of the *Review*, a task which requires extensive time creating, editing, and formatting submissions. We are indebted to all of the contributors and editors for the quality of the content. We especially would like to thank Dr. Michael Tomlan and Baker Program Director Dustin Jones for their continued support and guidance. We hope that you enjoy this volume of the *Review*.

Sincerely,
Christopher Trahan (Baker '19)
Ershad Chagani (Baker/MBA '19)
Jennifer Spritzer (Baker/MBA '19)
Joe McFalls (Baker '20)
Wilson Blum (Baker '20)

Baker Program

Highlights: WX New York Women Executives in Real Estate

Written by: Krizia Calmet, Cornell Real Estate Women

For the fourth consecutive year, the Cornell Center for Real Estate and Finance and Cornell Real Estate Women hosted its annual WX Panel Discussion held at Statler Hall on March 11. WX New York Women Executives in Real Estate is an invitation-only association for New York's executive-level women actively engaged in the commercial real estate industry. Through networking opportunities and educational seminars, WX promotes the advancement of women in the industry for its diverse membership of owners, developers, brokers, architects, engineers, bankers, and lawyers.

Sylvia Melikian (MBA '76) moderated the four member panel of distinguished WX executives who shared their experiences and strategies for achieving success in the industry and their respective fields of hospitality, banking, development, and asset management. Over forty undergraduate and graduate students in hotel administration, city and regional planning, real estate, and business attended the event. After the discussion, panelists and students enjoyed a networking reception in Statler Hall. Below are some highlights from the evening.

IMPORTANCE OF CORPORATE CULTURE AND SELF-AWARENESS

As students prepare for careers in commercial real estate, Karen Horstmann, portfolio manager of Norges Bank Real Estate Management, urged the audience to take risks and follow their intuitions. In Horstmann's view, finding the right corporate culture fit is important to retain employees. She emphasized the importance of cultivating self-awareness and recounted her personal evolution from a shy math geek at MIT to a confident and vocal business school student. Amy Applebaum, deputy team lead of Bank of China, advised students to ask thoughtful questions during the interview process and take note of nuances such as attire, working hours, and employee decision-making. Sylvia Melikian, a principal of portfolio management at MacFarlane Partners in San Francisco, also encouraged awareness of culture-defining signals such as physical working environments. "People are reflections of the culture. The more you can communicate, the better," Cheryl Boyer, COO of Fulcrum Hospitality stressed that culture misalignment can be detrimental for both employees and employers. Ana Kalugina, a senior associate in the company's commercial real estate banking group, said that, even at large multinational companies like JP Morgan, there are sub-cultures within the firm with their own work styles.

COMPORTMENT

"I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel." Melikian referenced the famous Maya Angelou quote when emphasizing the importance of professional behavioral characteristics ranging from posture, speech fillers, eye contact, and body language. Kalugina reflected on the value of her communications course at Cornell and urged students to take advantage of the tremendous number of resources while in school. "We all have to communicate and communicate effectively," commented Boyer after stating how she also found her communications class at Cornell helpful. Applebaum also stressed the importance of effective communication since 90 percent of communication is nonverbal (vocal, gestures, postures) while the remaining 10 percent is verbal. Horstmann also mentioned a study in which men apply for jobs when they meet 60 percent of qualifications while women apply only if they meet 100 percent. She urged attendees to "stop the negative dialogue and believe in yourself."

NAVIGATING THE "PINK GHETTO"

Back in the 1970s the term pink ghetto or pink-collar was coined to represent women working in care-oriented fields such as secretarial work or child care. Today, it signifies women who are not moving past the mid-level staff roles, or those in commercial real estate who are stuck in either investor relations or fundraising roles. Melikian stated that one must touch the money and enter investment roles to gain stature. Applebaum said that "If you don't ask, you


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IN REAL ESTATE
Panel Discussion
March 11, 2019

don't get," urging students to apply for roles they desire. Horstmann also reflected on how people tend to get pigeonholed by their workplace identities.

CHOOSING YOUR CAREER PATH

The panelists compared their experiences working at both large and small firms and noted that a career path is never linear. "If an experience adds to your toolbelt, it'll end up being helpful," said Applebaum. Melikian, unaware she would be drawn to real estate early in her career, trusted her gut instinct and eventually found the right opportunity. She stated that, while it is difficult to work directly for a developer, initially working at a large multinational firm may provide more learning and networking opportunities. Boyer began her career at a large company with robust training programs that allowed her to build the foundation to hit the ground running in her subsequent roles with boutique firms. Of knowing the time to change jobs or seek a different role, Applebaum said "if you aren't learning anything new, it's time to make a change."

BEING PROACTIVE

"Ask for feedback after every single project. Don't wait until your annual review," said Applebaum on the importance of continually seeking feedback from co-workers, clients, and supervisors. Boyer also emphasized the observance of valued skills and successful practices of colleagues within companies. Additionally, the way one reacts to feedback is "equally important" and "Instead of getting upset, one should actively listen and develop a plan." said Horstmann.

CORPORATE CULTURE AND FAMILY

"You can have it all just not at the same time," said Applebaum on prioritizing children while working. When asked how to factor in family and children, Boyer recommended developing a strong support network of friends and family in case of emergencies or erratic work schedules. Applebaum said to make sure you have good rapport with your manager early on in your role. Fortunately, corporate culture is trending in a positive direction and companies are adjusting to working parents, commented Horstmann.

DON'T BE AFRAID OF FAILING.

When speaking about failure, Applebaum said it's, "the best way to learn so don't be scared of it." Even though experiencing a major career setback or failed project may be difficult, "no one is going to take you seriously unless you have at least two failures," said Horstmann. If anything, when she interviews candidates, Horstmann is more inclined to hire those who have worked through a downturn or experienced significant failure as it proves their resilience. While students are shielded at Cornell, work environments provide no protection. Boyer urged students forsake their comfort zones and endure challenges.

NETWORKING IS NOT NETWORKING

Given that real estate is such a people-oriented industry, one student asked the panelists to share effective networking strategies. Kalugina said to consider networking as more of a conversation while Melikian positioned networking as a chance to expand friendships and build knowledge. Early in her career, Boyer was expected to attend conferences and network with as many people as possible. She recommended students to observe event attendees in advance and make efforts to remember names. For Boyer, networking remains essential in her career as getting the story behind every deal is crucial to success. "You never know who will come back in your circle, so always be professional and respectful," said Horstmann.

ABOUT THE PANELISTS

Sylvia Melikian (MBA'76), Principal of Portfolio Management at MacFarlane Partners. Sylvia Melikian oversees the real estate portfolios that MacFarlane Partners manages on behalf of its capital partners. A member of the firm's investment and senior management committees, she serves as its primary client contact and also has helped lead its business development efforts, having raised $2.7 billion in institutional equity for investment in real estate during her 17 years with the firm. She has more than forty years of real estate experience. Ms. Melikian earned her Master of Business Administration from Cornell University and received a Bachelor of Arts degree from University of California, Los Angeles.

Amy Applebaum (CALS '86), Deputy Team Lead, Bank of China. Amy Applebaum is the Deputy Team Lead for the NY lending team at the Bank of China where she oversees new business origination, underwriting and portfolio management for commercial real estate. Prior to joining Bank of China, she was an Executive Director with JPMorgan Chase in the commercial real estate group focusing on real estate lending and subscription finance. Ms. Applebaum has over 25 years of experience in real estate banking, subscription finance and economic development. Ms. Applebaum is a past president of the Association of Real Estate Women, graduated from Cornell University and received an MBA in finance from NYU Stern School of Management.


Sylvia Melikian (MBA ’76)

Cheryl Boyer (Hotel ’87), Chief Operating Officer, Fulcrum Hospitality. Cheryl Boyer is the Chief Operating Officer of Fulcrum Hospitality, a boutique advisory, asset management and real estate investment firm focused on the hospitality and gaming industries. Prior to joining Fulcrum, Cheryl was the President of Lodging Advisors, a highly-regarded consulting practice. She has held senior leadership roles with PricewaterhouseCoopers’ Hospitality & Leisure and Hotel Partners, Inc., and was a consultant with the hospitality practices at Landauer Associates and Laventhol & Horwath. Cheryl started her career in hotel operations working with InterContinental Hotels and Accor. She is a graduate of the School of Hotel Administration at Cornell University.


Cheryl Boyer (Hotel ’87)

Karen Horstmann, Portfolio Manager, Norges Bank Real Estate Management (NBREM). Karen Horstmann has served as a Portfolio Manager for Norges Bank Real Estate Management (NBREM) since 2011. NBREM manages the unlisted real estate assets of the Norwegian Government Pension Fund Global, which has over $991 billion of public and private assets under management. Based in New York, Karen continues to focus on the expansion of NBREM’s US portfolio and joint venture relationships. Karen earned her MBA from Harvard Business School and received a Bachelor of Science in Finance from the Massachusetts Institute of Technology.

Anastasia Kalugina (MBA/Baker ’17), Senior Associate, Commercial Real Estate Banking, JP Morgan. Ana is a senior associate at JP Morgan’s Commercial Real Estate Banking group. Prior to REB, Ana worked in JP Morgan’s Global Real Estate, evaluating strategies focused on the company’s own real estate footprint. Ana is a 2017 graduate of Cornell, where she received an MBA and a Masters in Real Estate.


Amy Applebaum (CALS ’86)


Karen Horstmann


Anastasia Kalugina (MBA/Baker ’17)

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Alumni Highlight:
Jiwon Park (Baker/MBA ’18), Samsung

Jiwon Park is a member of the real estate investment team in the asset management department of Samsung Fire & Marine Insurance. A 2018 graduate of Cornell’s Baker Program in Real Estate and the Johnson School of Management, Jiwon served as a Research Associate at Hodes Weill & Associates in New York as well as at an asset management firm in Los Angeles while at Cornell. Prior to Cornell, she worked at JLL Korea. Jiwon is a graduate of the University of Southern California with a double major in accounting and real estate finance.

Photo Credit - Fortune.com

WHAT DID YOU DO PRIOR TO COMING TO CORNELL?

Prior to coming to Ithaca, I provided tenant representation services for multinational firms at Jones Lang LaSalle in South Korea for over five years. The experience was enjoyable. It provided me with understanding of the corporate landscape and the hierarchy of the country’s real estate industry leaders. My role allowed me to interact with these individuals and increased my interests in investments. I enrolled in Cornell to pursue these interests.

WHAT WAS YOUR EXPERIENCE IN THE BAKER PROGRAM?

The Baker Program does a great job preparing students for real estate careers. It is designed well so that students gain exposure to all aspects of real estate. This is especially true for the program’s first year core classes. I had internships in both development and capital raising. Those experiences refined my career path. The program’s focus on real estate prepares students to join a company at the management level by building hard skills such as financial modeling, and it provides knowledge of capital flows and deal structuring across asset classes. Students also enter jobs with the ability of established analysts equipped to advance in management. This is where the importance of soft skills–in presentation and communication–come into play. Cornell offered numerous classes focusing on such skills and prepared me to engage decisionmakers.

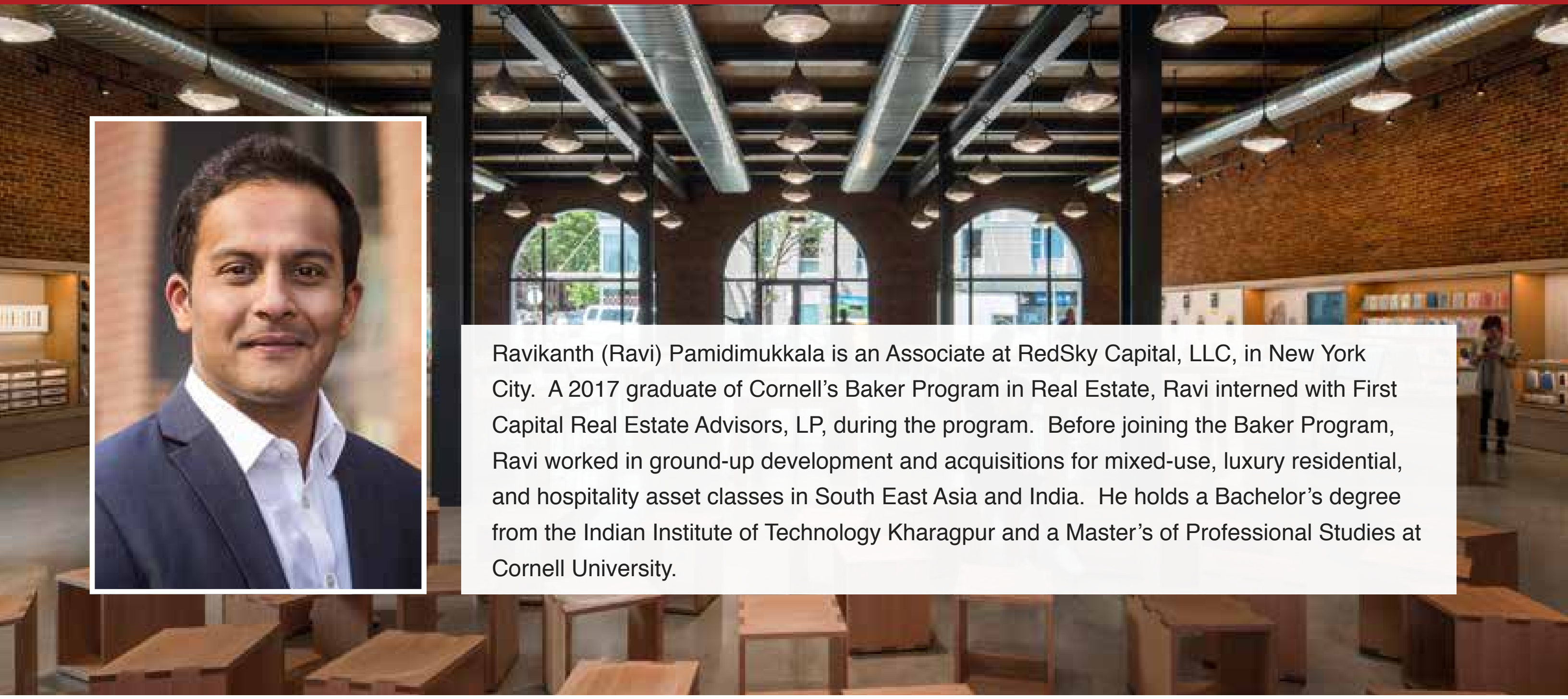
WHAT IS YOUR CURRENT ROLE AT SAMSUNG?

I work on the real estate investment team in the asset management department at Samsung Fire & Marine Insurance. My role is to identify profitable real estate asset investment opportunities both domestically and overseas. We have been active in the domestic real estate investment market for a long time. Recently we started to expand the company’s global presence prioritizing gateway cities in the United States and Europe.

THIS COMING JANUARY, BAKER STUDENTS WILL TRAVEL TO SINGAPORE. FROM YOUR PERSPECTIVE, WHAT ARE SOME IMPORTANT THINGS TO REMEMBER WHILE ENGAGING IN INTERNATIONAL BUSINESS?

The Baker Program is internationally diverse. It is essential that students have a sense of globalism. As capital flows across continents, I am reminded how essential it is for students to have a sense of globalism and to be cognizant of how business is influenced by values that sometimes differ from your own. Keeping up with the news is also important, as students should relate the technical aspects of real estate to actual events occurring across the globe. This way of thinking is will allow them to advance in their careers.

Alumni Highlight:
Ravikanth (Ravi) Pamidimukkala (Baker ’17), RedSky Capital, LLC



Ravikanth (Ravi) Pamidimukkala is an Associate at RedSky Capital, LLC, in New York City. A 2017 graduate of Cornell’s Baker Program in Real Estate, Ravi interned with First Capital Real Estate Advisors, LP, during the program. Before joining the Baker Program, Ravi worked in ground-up development and acquisitions for mixed-use, luxury residential, and hospitality asset classes in South East Asia and India. He holds a Bachelor’s degree from the Indian Institute of Technology Kharagpur and a Master’s of Professional Studies at Cornell University.

CAN YOU DESCRIBE YOUR CURRENT ROLE AT REDSKY CAPITAL?

I am part of the Investments team at RedSky focusing on acquisitions and capital markets. We are very active in capital markets, raising equity and debt from institutional partners–pension funds, insurance companies, sovereign and wealth funds–for our Brooklyn and Miami portfolios. On the acquisitions side, it is getting difficult to identify value-add deals given declining cap rates and increasing interest rates. That said, we have been able to acquire intriguing opportunities as we remain active in pursuing new deals.

WHY DID YOU CHOOSE YOUR CAREER PATH AND WHAT LED YOU TO REDSKY CAPITAL?

The Baker Program was extremely helpful in shaping my career path. I first met Ben Bernstein, Co-founder and Principal of RedSky, when he came to speak at the program’s Distinguished Speakers Series (DSS). I was intrigued by RedSky’s ability to transform Williamsburg’s retail profile and Ben’s success in partnering with JZ Capital Partners, founded by David Zalaznick ’76, a Cornell University trustee. Given that I wanted to work in a development shop that provided upside and deal flow, and that supported a cohesive philosophy, RedSky was a great fit.

WHAT CONSIDERATIONS GO INTO YOUR INVESTMENT/DEVELOPMENT DECISIONS WHEN EVALUATING OPPORTUNITIES?

Our investment thesis at RedSky is top down. We identify submarkets that have great macro fundamentals, and we spend tremendous amounts of time studying neighborhoods. We invest across all asset types and are entrepreneurial in identifying opportunities on a risk-adjusted basis. We continually look at submarkets in Miami, LA, New York, and other cities with an emphasis on creating value and robust livable communities.

HOW DID YOUR BAKER PROGRAM EDUCATION HELP PREPARE YOU FOR SUCCESS IN THE REAL ESTATE INDUSTRY?

The Baker Program was an instrumental two-year education experience that positioned me for success in the industry. The diversity of the students in the program provided an invaluable global perspective. With a background in architecture, I benefited from the Baker Program’s

instruction in all aspects of real estate, particularly the essential financial knowledge that is needed in the industry.

WHAT ASPECT OF YOUR CURRENT ROLE DO YOU ENJOY THE MOST?

I most value the entrepreneurial nature of my role at RedSky. My team is young and integrated horizontally and vertically, allowing for creative freedom and pride in our work. Last year was busy for us in the capital markets and provided numerous challenging and valuable experiences.

WHAT HAS BEEN YOUR MOST MEANINGFUL PROJECT OR WORK-RELATED EXPERIENCE POST BAKER?

One of my primary focuses is RedSky's high street retail portfolio in Williamsburg. This portfolio consists of 23 assets in various stages of development and a collection of tenants including Apple, Sephora, Vans, NorthFace, Urban Outfitters, and Toms, among other nationally recognized tenants. As the largest retail landlord in Williamsburg, and given the complexity of the portfolio (lease-up, construction, acquisition and other idiosyncrasies), executing the best possible outcome from a capital markets standpoint has taken a lot of my focus. In the summer of 2018, I worked on refinancing the portfolio with a $326 million combined loan from JP Morgan, BlackRock, Schroders and Rockwood. The opportunity to be actively involved in such a large transaction for a one of a kind neighborhood-transforming portfolio has been very meaningful.

DO YOU HAVE ANY ADVICE FOR CURRENT BAKER STUDENTS?

The size of the Baker Program provides a very cordial environment to get to know your classmates and faculty. Real estate is a relationship driven business and having these connections is invaluable. Any professional help or advice I have needed is just a call away from a fellow Baker.

I strongly encourage the current Bakers to participate in as many case competitions as possible. Working in close tandem with my peers has been the best way for me to build relationships. Additionally, case competitions gave me the opportunity to practice presenting real estate ideas and solutions, and also helped me identify the career I would pursue after graduation.

Case Competitions

Cornell University's 2018 UT Austin National Real Estate Case Challenge Team featured left to right: Alexander Mason (Baker '20), Wilson Blum (Baker '20), Dustin Dunham (Baker '19), Mel Fish (Baker '19), Christopher Trahan (Baker '19), Yates Parrish (Baker '19), Julian Karel (Baker/MBA '20), Dr. Michael Tomlan (Ph.D. '83), and Nanzy Guzman (MBA '19).

COMPETITION SUCCESS

Cornell University continued its strong showing this past year in several case competitions across the country winning 1st place in the Argus University Challenge, 3rd place at the University of Miami Impact Investing Competition, and an Honorable Mention at the UT Austin National Real Estate Case Competition and the ULI-Hines Student Competition. Teams also participated in the Kellogg Real Estate Venture Competition at Northwestern University.

1ST PLACE: ARGUS UNIVERSITY CHALLENGE 2018

Cornell University's team of Peter Romano (Baker/MRP '19), Laura Curi de Mattos (Baker '18), and Paul Heydweiller (Baker '18) explored redevelopment scenarios of a shopping center in Houston, TX. that suffered structural damage. The project studied regional trends of the Houston and Inner Loop neighborhood markets, and analyzed its retail sector developments in detail. The team underwrote three options for capital expenditure improvements and revised rent rolls using market knowledge to make assumptions on timing, revenue, expenses, and financing. Testing the sensitivity of the various scenarios, the team recommended the owner complete the capital expenditures and sell the property in January 2018 to capture the added value. The Cornell team's analysis won 1st place. They would like to thank Dr. Crocker Liu, who served as faculty advisor.

3RD PLACE: UNIVERSITY OF MIAMI IMPACT INVESTING IN CRE COMPETITION 2018

The 2018 Cornell University team of Miguel Klipstein (Baker/MBA '18), Alejandro Garza (Baker '18), and Mark Hughes (Baker '18) proposed that Miami's own Sunset Pier be converted from an underutilized fishing pier adjoining the William Powell Bridge into a vibrant retail attraction, complete with specialized stores and restaurants providing indoor/outdoor experiences. The Pier presents an incredibly rare opportunity in south Miami to serve the dual purposes of revitalizing an old bridge and featuring retail components made from used shipping containers. The location, size, shape and condition are key to transforming a lost icon within the City of Miami. The team proudly placed 3rd at the competition and is grateful to the support received from Senior Lecturer and Director of the Baker Program Dustin Jones.

HONORABLE MENTION: UT AUSTIN'S NATIONAL REAL ESTATE CASE CHALLENGE 2018

Cornell University was represented by Mel Fish (Baker '19), Yates Parrish (Baker '19), Dustin Dunham (Baker '19), Nancy Guzman (MBA '19), Julian Karel (Baker/MBA '20) and Christopher Trahan (Baker '19), at this invitation only case-based real estate competition involving the analysis of a recent real estate venture transacted by a leading global real estate firm. After a two-semester preparation for the intensive competition at the McCombs School of Business at UT Austin, the Cornell team competed against 20 of the top MBA and Real Estate programs. The team evaluated and structured a potential partnership for proposed alternative investment decisions returning to Ithaca with an Honorable Mention. The team trained under Dr. Michael Tomlan (Ph.D. '83), the Director of Graduate Studies of the Baker Program, and John Minikis (J.D. '60) and is thankful for their guidance. Wilson Blum (Baker '19) and Alexander Mason (Baker '19) also served as understudies to the team and will represent Cornell University at next year's competition as team captains.

HONORABLE MENTION: ULI-HINES STUDENT COMPETITION 2019

Cornell University fielded an interdisciplinary team including Tim Dehm (MRP '20), Krizia Calmet (Baker '19), Sage Taber (MLA '20), Akshai Wilkinson (MLA '20), and Jihany Hassun (MLA '20) at the 17th annual ULI Hines Student Competition. The brief challenged students to create a comprehensive development proposal for an area in Cincinnati, Ohio, comprising portions of a highway, the central business district, and the central riverfront along the Ohio River. Teams were asked to consider options for decking the highway, Fort Washington Way, and to propose a development option for adjacent sites. The brief asked teams to illustrate innovative approaches to five general elements: (1) planning context and analysis, (2) a master land use plan, (3) urban design, (4) site-specific illustrations of new development, and (5) development schedule and finances. Cornell's "Encore" proposal illustrated a transit-oriented and pedestrian-friendly 25-acre mixed-use site with 827 new housing units (10 percent affordable), a 330-key hotel, over 5,703 jobs, and 287,300 SF of retail aiming to revive the city's rich musical history. The team from Cornell University came away with an Honorable Mention and would like to thank Dr. Suzanne Charles who serves as the faculty coordinator for the competition.

KELLOGG REAL ESTATE VENTURE COMPETITION 2018

Cornell University, represented by Ali Daye (Baker '19), Tyler Phelps (Baker '19), Henry Akerele (Baker '19), Jimin Won (Baker/MBA '20), Kristen Collins (Baker/MRP '20), and Lera Covington (Baker/MRP '20), participated in Northwestern University's Kellogg School of Business Real Estate Venture Competition that promotes entrepreneurship within Real Estate. The team put together a development deal for a mixed-use (retail, office and residential) project by renovating a commercial building adjacent to new rails-to-trails project in Durham, NC. The site lies just outside of the CBD and the new trail would connect it directly to downtown. The team appreciates the guidance of Dr. Crocker Liu.

Peter Romano (Baker/MRP '19), left, Laura Curi de Mattos (Baker '18), center, and Paul Heydweiller (Baker '18), right, winners of the ARGUS University Challenge 2018

Alejandro Garza (Baker '19) and Mark Hughes (Baker '18), right, and Miguel Klipstein (Baker/MBA '18), left, pose with University of Miami Impact Investing in CRE Competition 2018 judges

Project from Tim Dehm (MRP '20), Krizia Calmet (Baker '19), Sage Taber (MLA '20), Akshai Wilkinson (MLA '20), and Jihany Hassun (MLA '20) submitted at the 17th annual ULI Hines Student Competition.

International Trek: Shanghai, China

COLLIERS VISIT

City	Office	Retail	Industrial	Business Park
Beijing	4.0%	5.0%	5.0-5.5%	4.2-4.8%
Tianjin	4.5%	6.0%	5.5-6%	N/A
Shenyag	5.3%	6.3%	6.0%	N/A
Shanghai	3.6%	4.0-5.5%	5.0-5.5%	4.3%
Nanjing	5.3%	5.5-6.5%	5.5-6.5%	5.0-6%
Hangzhou	5.1%	5.5-6.5%	5.5-6.5%	5.0-6%
Shenzhen	3.9%	5.2%	6.7%	4.5-5.0%
Guangzhou	4.0%	5.0%	6.0%	5.5-6%
Chengdu	5.7%	6.0%	6.0%	7.0-8%

Property Investment Yields In China By Sector

Beginning their international trek, the Baker Program in Real Estate students visited the Colliers International office in Shanghai. The firm currently has 15,000 professionals and staff in 396 offices in 68 countries across six continents. Colliers has two billion square feet under management and $2.6 billion in annual revenue. Colliers Shanghai is the regional headquarters for east China and the company's largest office in the country. This office provides a full range of services for industrial, office, retial and residential. Its landmark Shanghai projects include Platinum, L'Avenue, Ecocity, Chamtime Corporate Avenue, and Longyu International Plaza. The Baker Program was honored to be welcomed by Colliers executives Dave Chiou, Senior Director of Research, North, East, and West China, Timothy Chen, Director of Advisory Services, East China, and Jie Li (MPS '01), Managing Director, North China, and Head of Valuation and Advisory Services, China. They offered students insights into the country's changing real estate landscape.

The team at Colliers began their presentation on global macro conditions, presenting how the real GDP growth of China was 6.9 percent in 2017 (compared to 2.3 percent for the U.S. and 3.8 percent for Hong Kong during this time period) and how growth will continue at stronger rates than the U.S., Japan, South Korea, Hong Kong, and Singapore over the next few years. They also discussed the implications of the U.S.-China Trade War with the students. From a Chinese perspective, they predict three possible outcomes. In the first scenario, the trade war ends quickly, allowing China to open further to foreign finance and service sectors. In the short term, this negatively impacts sectors of trade and office, logistics, and retail in China. Opportunities, however, for long term leases in China will be provided at discounts, and finance and professional services will benefit from a more open market. In the second scenario, the trade war continues for a longer period, however, China keeps its commitment to finance service sectors. In this scenario, China's GDP growth, trade, and the real estate sectors will be negatively impacted. Demand for office, business parks, logistics, and retail will decrease. In the third scenario, a new 'cold war' occurs, slowing down growth in Asia and escalating tensions between the U.S. and China. This scenario results in disruptions to trade flows in China as real estate yields decline. The country will also see stagnant GDP growth, a weaker RMB, and significant capital outflows. Since the beginning of the trade war, the RMB has depreciated 6.9 percent against the USD. As of 2017, the U.S. consisted of 21.5 percent of exports from China.

From the U.S. perspective, Colliers predicts three possible scenarios for the outcome of the trade war. In the first scenario, the trade war ends quickly, immediately impacting U.S. trade and the economy. Longer term, China will consume more US goods and there will be greater trade deregulation. More trade and investment will positively impact the real estate sector. In the second scenario, the trade war continues for a longer period with more items affected and 10-25 percent duties on $200 billion worth of Chinese goods. This scenario will result in negative impacts on global trade. In the third scenario, the U.S. and China get locked into a trade war and the U.S. retaliates on China's $505 billion exports. This will have a negative impact to global trade, economy, and real estate, via a global currency war and inflationary pressure with possible rate hikes. Currently, China accounts for 65 percent of the US trade deficit, with 62 percent of net imports from China originating from electronics and machinery.

In addition to discussing both sides of the trade war, the team at Colliers discussed future expectations for China's economy and real estate. China is beginning to prioritize domestic consumption to boost GDP. Exports for China are almost equal to its imports. The government and state-owned enterprises account for about two thirds of the country's total debt. To encourage increased personal consumption, China has also reduced the personal income tax. Regarding its real estate, demand for office space in Tier 1 cities remains robust, with demand being driven by traditional service sectors and new tenant sectors. Tier 2 cities do experience higher prime office yields, but also generally higher vacancy rates. While the highest office rents in Asia are in Hong Kong, Beijing and Shanghai remain near the top of the list at numbers five and seven, respectively. Shanghai also led Asian cities for the value of real estate transactions in 2017. Over the past ten years, Shanghai has averaged around 40 percent of the total value of commercial real estate transactions for all of China. Office in China remains the most sought-after commercial asset, with 51.7 percent of 2017 investments. Hotel and others made up 19.6 percent of total investments during 2017, with retail being 14.8 percent, mixed-use being 7.2 percent, and industrial being 6.7 percent (Colliers, 2019).

The Baker Program in Real Estate thanks Colliers International Shanghai and our gracious hosts for providing insight into the Chinese real estate market as well as the impact of a trade war with the U.S.

PLAZA 66

After leaving the Colliers office on the first day of their Shanghai real estate trek, Baker Program students headed to Hang Lung Properties' Plaza 66 in the West Nanjing Road retail district, where they learned about luxury retail in Shanghai. Students were greeted by Cornell alumnus Tom Leung (B.Arch. '87), Head of Asset Assurance and Improvement at Hang Lung Properties, and several associates who explained how proper asset management can allow an investment to stay relevant in a rapidly evolving retail environment. Plaza 66 is a 176,000 square foot upscale shopping destination containing several flagships of retail's most high-end brands. When initially opened, it was one of the first luxury shopping destinations in Shanghai as it was the first to attract contemporary international brands. Since then, it has continued to set the standard for luxury shopping in the city.

The visit included an overview of the mall's redesign that was led by American architecture firm Kohn Pederson Fox Associates (KPF). The redesign, which was completed last summer, includes new bronze and gold finishes throughout as well as the use of natural light from atrium style glass ceilings. With over 100 fashion houses, this property is considered the home of luxury retail in Shanghai. Despite being among the first to enter luxury retail, Hang Lung recognizes the need to constantly innovate. Refuting the notion that "retail is dead," Hang Lung maintains its position at the top of the retail market by pioneering trends that others are quick to follow.

For example, Plaza 66 is successfully implementing the use of visible and unconventional luxury shops to drive merchandise sales. These small, temporary outlets fill once thought unusable center floor space for a limited time. This strategy creates synergies between the temporary outlet and the flagship space. Additionally, Plaza 66's VIP lounge, reserved for the mall's most loyal top-tier customers, and its roof terrace garden space for special events extend the destination's prestige while supporting its versatility. Its success is a testament to the leadership of the firm, the thriving condition of retail in Shanghai, and the importance of ingenuity in the retail sector.

GENSLER SHANGHAI SITE TOUR

On Tuesday, Baker students had the privilege of meeting with the staff of Gensler, one of the largest and most renowned architecture firms in the world, at their Asia Regional Headquarters in Shanghai. Gensler, formerly known as M. Arthur Gensler Jr. & Associates, was founded in San Francisco in 1965 as a corporate interior design firm. Fast forward to today—with 46 offices, over 6,000 employees and $1.2 billion in revenues in 2018—the company has grown to be a leader in real estate project design for both large and small concepts. The Shanghai office opened in 2001 and has 240 employees all focused on cultivating the way people experience and interact with the built environment. The Baker Program was honored to be welcomed by Gensler executives Edward Chao and Joe Fan as they gave students an inside look into one of the world's most spectacular new real estate developments, Shanghai Tower. Gensler's service offerings in areas such as urban planning, interior design, architecture, consulting, product design, and brand design made them the obvious choice to take on one of the most complex and architecturally significant new buildings.

At 121 floors, 4 million square feet of mixed-use space, and rising 2,073 feet above the city, Shanghai Tower is not just the world's second tallest building. It is an engineering achievement and national statement. The glass façade spirals 120 degrees from top to bottom. This architectural design feature reduces wind loads on the building by 24 percent and thereby lowered the amount of construction materials needed to complete the structure by up to 25 percent as compared to conventional designs. The elevators are also the second fastest in the world, silently zooming up and down at 40 miles an hour. The 9 different vertical gardens designed as public spaces and captured rain water systems all combine to make the tower one of the

"greenest" super high-rise buildings ever built. Shanghai Tower significantly exemplifies the rise of the city and the growth China has experienced in recent decades. Gensler captured this expression in a structure that redefines how people use and experience modern cities.

Gensler co-founder Art Gensler said of Shanghai Tower, "*The Shanghai Tower represents a new way of defining and creating cities. By incorporating best practices in sustainability and high-performance design, by weaving the building into the urban fabric of Shanghai and drawing community life into the building, Shanghai Tower redefines the role of tall buildings in contemporary cities and raises the bar for the next generation of super-highrises.*"

Buildings as expressions of art, finance and community life will continue to evolve and China appears to be leading the way in several of these projects.

HINES: ONE MUSEUM PLACE

Afterward, Baker students visited Hines at One Museum Place in the Jing'an District of Shanghai. Hines is a privately owned global real estate investment, development, and management firm, founded in 1957 with a presence in 189 cities on five continents.

Baker students had the opportunity to tour One Museum Place and speak with members of the Hines team. One Museum Place is a 1.4 million-square-foot, 60-story Grade A office tower with a six-story retail podium. The life-style retail podium has a variety of food and beverage offerings as well as a large outdoor garden and terrace. The building was awarded LEED Platinum Certification and is one of four buildings in Shanghai with this designation. To acquire the building, Hines competed in an auction for the land and structure with many qualified competitors. Not only did the

project require structural changes, but Hines also needed to adjust incomplete construction work that had been performed on the site by a previous developer.

Hines acquired the building in 2013 and was granted a 50-year ground-lease. Local political pressure and development restrictions presented unusual challenges so that the final project height was undetermined at the beginning of construction. The government permitted Hines to build as high as the company pleased within a short timeframe and, once that timeframe concluded, construction on additional floors would be prohibited. This constraint contributed to Hines and the development team completing one floor every three days, which a record speed for Shanghai construction. Hines needed to re-engineer the incomplete project's foundation and resumed construction in 2014.

The former foundation was redeveloped in structure and design to connect Metro on B2. Easy access to workers and the public is essential to One Museum Place to be successful as an office in a lively neighborhood. Since the Museum and high density of residential housing creates large volumes of pedestrian foot traffic, the connection to the Metro will help One Museum Place establish itself as the obvious choice for high end office space in the area. Hines developed extremely efficient floor plans working in collaboration with the company's engineering team in Houston. These new plans brought the buildings original planned total weight down to 170 tons from 200 tons, a testament to the company's resources and expertise. Gensler, the architecture and design firm the Baker students met with earlier that day, was selected as the architect for the project and enjoyed the creation enough to establish it's Asia Regional Headquarters in the property.

SHANGHAI URBAN PLANNING MUSEUM

"Shanghai is bigger, faster . . . perfect," explained the guide ushering the Baker Students through the Shanghai Urban Planning Exhibition Hall. These three adjectives aptly describe the ambition of Shanghai's urban planning achievements spanning the last thirty years. The guide explained there was one tunnel in 1991 connecting the more established western region of Shanghai, known as Puxi, and the historically rural region of Pudong located east of the Huangpu River. According to the guide, there are now twelve bridges and fourteen tunnels, with an additional six bridges and eight tunnels in some stage of planning or construction. The development of Pudong continues to provide needed relief to the strains on housing experienced by Puxi for more than a million residents. Pudong's new central business district shares the name of its skyscraper, the earth's 2nd tallest, the Shanghai Tower. Shanghai, once a lowly and rural fishing village "upon-the-sea" (literal translation of "Shanghai"), rivals Beijing for economic importance in China.

At the exhibition, students learned about the rich history of Shanghai's development dating back to the Qing Dynasty. The city's modern history and path of urban development arguably began with the British occupation during the Opium Wars. Upon defeat, the Chinese designated Shanghai as one of five international ports specified in the treaties of Nanjing. Subsequent treaties carved out territorial districts or Concessions for the British, French and Americans, which have since reverted to Chinese control. The influence of the west from this era is preserved in the built environment as the architecture of these preserved former Concessions reflect the architecture styles of the city's former occupiers. The Treaty of Nanjing represents the first time China was commercially accessible to the west in modern history. The Chinese Open Door Policy of 1978 is responsible for the most recent economic boom from western foreign investment, and Shanghai became a conduit for foreign capital due to its size and world class infrastructure. Pari-passu with rapid economic growth has been the urbanization of China. In 1950, thirteen percent of people in China lived in cities. That number reached forty-five percent by 2010, with projections of sixty percent by 2030.

For many students, the highlight was a six-hundred square meter (~6,400 square foot) scale model of the city representing one-sixth of its size. The model's endless high-rise buildings left students in amazement. Until one physically visits Shanghai, one cannot begin to comprehend its astonishing scale. The visit explained the attractiveness of the city for companies like WeWork and Disney, the students' next destinations.

WEWORK

Baker students headed to Shanghai's largest WeWork office covering 18 floors. The location is easily accessible from Metro lines 9 and 13. Students walked through multiple floors of the collaborative space with Zong Wang (MMH '10), Senior Manager of Strategic Finance, providing insight to the massive expansion WeWork continues to make in China. Shanghai and greater China have seen significant adoption of co-working, communal office concepts in recent years (Wang & Loo, 2017). With the acquisition of Naked Hub (a local co-working startup) in 2018, WeWork now boasts over 20 offices in Shanghai alone. WeWork maintains 69 offices throughout China and plans to expand. What began as a single office in New York City in 2010, now boasts 300 physical locations, globally. The company services 300,000 members with over 36 million square feet of space in the current portfolio. In East Asia, WeWork enjoys 90 percent occupancy, and a global expansion of 2 million square feet of space added per month.

Students sat with Evan Kleinberg, Managing Director of WeWork Asia, discussing the company's global strategy, particularly its success in China where foreign, especially Western startups, have not always gained strong footholds. Successful businesses and enterprises in China have found ways to understand and adopt elements of its culture into their products and services. For centuries, understanding the intricacies of China's culture has been an important aspect of establishing legitimacy in the country. Conquest dynasties such as the Manchu Qing for example, exhibited substantial integration into China's culture (Ho, 1998). In this regard, despite rapid transformations taking place in the world's oldest living civilization, some fundamental requirements are business as usual. WeWork has carefully infused well-understood concepts within Chinese culture into its pitch to both landlords and members. For example, WeWork emphasizes the concept of community and mutually beneficial learning opportunities between members in support of the co-working space, drawing similarities from China's hutong communities of old Beijing to shikumen rowhouses of Shanghai. Traditional Chinese homes were community-facing and neighborhoods often functioned as communal spaces where residents both lived and conducted business. WeWork has been able to weave this concept of communal benefits into its mission statement to "Create a world where people work to make a life, not just a living" when selling to the Chinese market. In addition, 95 percent of the company's decisions are made at regional levels providing heightened understanding of local consumer demands.

The trajectory of WeWork in the U.S. is mirrored in China. Contrary to the belief that WeWork is primarily for startup businesses, over 30 percent of WeWork's membership consists of Fortune 500 companies. Amazon is one of WeWork's largest customers with over 10,000 members. Similarly, some of China's prodigious tech companies such as Alibaba, Didi, and Tencent are becoming WeWork's largest clients in the country. Within the WeWork site students visited, three of the 18 floors were occupied by Alibaba. WeWork offers products and services beyond office space including Global Access for travel and remote workspaces, Custom Build, where swing space and satellite offices can be designed and operated by WeWork, and Powered by We, a construction, design, and property management service. China has over 160 cities with a population of over 1 million people and recent studies show that 36% of the nation's land supports 96 percent of the world's most populous country of nearly 1.4 billion people (Bai, Shi, & Liu, 2014). This is welcome news for companies like WeWork that see continued rise in swiftly urbanizing landscapes like China. The last two years of significant expansion and acquisitions made by WeWork in China appear to be the beginning of the company's rise in the People's Republic.

SHANGHAI DISNEY

After visiting WeWork, Baker students headed to the Shanghai Disneyland Park Corporate office in the city's Pudong district. Murray King, Vice President of Public Affairs at Shanghai Disney Resort, presented the recent

development and opening of the themed resort. Murray detailed the initial planning, site selection, construction, and development process. The concept of a Disney resort in mainland China was first envisioned in the early 1990s. Both China and the entertainment company saw great potential in opening a themed park in Shanghai to grow Disney's international presence in the Chinese market, while supporting the leisure and tourism needs of the country's growing middle class.

Identifying the ideal site was crucial to the success of the theme park and resort. Murray emphasized how the Pudong location not only provides unparalleled access to existing public infrastructure, highways, and transportation, but is also situated on 963 acres of land necessary for future growth and development. To execute such an immense project in China, The Walt Disney Company formed a joint venture with the Shanghai government for assistance to support the overall development of infrastructure and knowledge of the market.

To ensure the success of the theme park, Disney recognized the importance of creating integrated resort and theme park concepts that curates attractions and characters that not only resonates with Chinese guests, but also maintains the culture and tradition integral to Disney's past success. Murray noted how the concept, "Authentically Disney, Distinctively Chinese", was created by The Walt Disney Company chairman and CEO Bob Iger, and would be adhered to throughout the phases of development. The park has been wildly successful. It continues to set records for attracting visitors and propel Disney's growth in the market.

GAW CAPITAL

The rapid growth of the Chinese economy has attracted many firms. Gaw Capital Partners, a private equity fund management company based in Hong Kong, is one such firm. Gaw Capital specializes in real estate in countries around the world and has $18.3 billion under management (Gaw Capital Partners, 2019). Affiliate companies include Gaw Capital USA and Gaw Capital UK. The company is consistently recognized as an industry leader, having received numerous awards including the 2016 HICAP Single Asset Transaction of the Year Award (InterContinental Hong Kong Hotel) and the 2017 Global PERE Awards "Asia Capital Raise of the Year." Baker Program students had the privilege of meeting with Humbert Pang, Managing Principal and Head of China with Gaw Capital. Mr. Pang gave an insightful presentation highlighting China's ongoing economic reform and national growth initiatives. The presentation concluded with an overview of Gaw Capital's investments in the region.

The Baker Program's visit to Shanghai coincided with the 40th anniversary of China's Reform and Opening. This reform shifted the Chinese economy towards market-based norms, spurred decades of tremendous growth, and firmly established China as a leader on the international stage (Oh, 2018). During his presentation, Mr. Pang identified urbanization, middle class consumption, and technological development as the key drivers of economic growth during the reform. As a result, China is now the world's second largest economy surpassed only by the United States. According the World Bank, in 2017 China had an estimated GDP of $74.1 trillion which represented 14.84 percent of the global economy (Gramer, 2017). The impact of this growth can be seen in cities throughout China including Shanghai, chief among these being the transformation of the Pudong

district from underdeveloped farmland to a major financial center.

If China continues to grow at previous rates, it is poised to overtake the United States as the world's largest economy by 2032 (O'Brien, 2017). Mr. Pang highlighted many of the trends and government strategies that are propelling China towards this milestone. Chief of these is the *Made in China 2025* (MIC 2025) governmental initiative. The U.S. Chamber of Commerce describes MIC 2025 as "a ten-year, comprehensive blueprint aimed at transforming China into an advanced manufacturing leader (U.S. Chamber of Commerce, 2017)." Shifts in consumer demand are also driving economic transformation. For example, the expansion of the middle class has led to greater privatization of the health care system. As a result, private hospitals doubled in number to 16,900 hospitals between 2011 and 2017, accounting for 57.2 percent of all Chinese hospitals (The Collective, 2018). Other trends that Mr. Pang touched on include the rising popularity of weekend schools, high-quality bilingual education for Chinese youth, increasing intercontinental travel, desire for luxury weekend breaks, and the increasing digitalization of daily life through the emergence of innovative apps.

Gaw Capital works diligently to execute investment strategies that capitalize on these emerging trends. Mr. Pang highlighted a variety of such investments in the conclusion of his presentation. One of the most interesting of these was Tencent Doctorwork. Founded in 2016, Tencent Doctorwork is a joint venture between Gaw Capital, the Shenzen-based technology company Tencent, and two other companies. The *South China Morning Post* describes the venture as a "private health care network that offers an ecosystem of both online and offline services in a country where gaining access to medical care can be difficult." (Deng, 2018) The company introduced a coworking approach to the high-end, private hospital market by creating clinics where doctors can work part-time, away from their full-time hospital placements (Xu, 2018). Tenecent Doctorwork also aims to integrate technology into the health care experience. This is done through an app that will "help monitor [patient's] health such as sleep patterns, exercise, and diet. The other goal [for the app] is the long-term management of patient health and treatment of diseases that they may have." (Lew, 2018) Tying into more traditional investments, the first protoype of Tenecent Doctorwork clinic in Beijing is located on the ground floor of Pacific Century Place, one of Gaw Capital's most prominent Asian investments. The visit to Gaw Capital provided Baker students with invaluable insight into how market trends can be expertly used to craft lucrative investment strategies.

JONES LANG LASALLE

As one of the largest full service commercial real estate firms in the world, Jones Lang LaSalle (JLL) has a growing presence in the Asia Pacific Region. Baker Program students visited JLL's Shanghai headquarters, which was designed with the goal of setting the global benchmark for its offices around the world, and its leaders about regional real estate trends. Ling Wei Tan (SHA '12), Vice President at JLL's Hotels & Hospitality Group, toured students around the company's office and explained that the workplace has raised the bar for JLL offices globally as the property is the first WELL Certified project in Asia, and just the third WELL Platinum certified building worldwide (WELLCertified, 2018).

Employees enjoy natural elements in the workplace like reclaimed wood floors, a massive fish tank, living plant walls that help provide a low carbon footprint, and open spaces full of natural light. The process of becoming WELL Platinum Certified involved over a hundred factors ranging from sophisticated air filtration systems to fdesign considerations. The process points to a focus on sustainability and how the world perceives real estate

in Shanghai (WellCertified, 2018). Afterward, students enjoyed a presentation describing the massive urbanization occurring in Chinese cities that is fueling a real estate boom that is unprecedented in the country's history.

JLL's research shows that Shanghai has experienced over 20 percent growth in capital appreciation over the last 4 years in office and residential assets, though a reversal of this long-term trend is beginning to be seen (JLL, 2018). In Beijing, prices for luxury apartments recorded a 2.6 percent decline quarter over quarter in Q3 of 2018 as stricter lending policies pushed home buyers out of the market (JLL, 2018). In Shanghai, multifamily apartment rental growth was flat year over year at -0.1 percent and property unit prices stalled with growth at -0.5 percent quarter over quarter, signaling a possible slowdown due to tightening policies

such as price caps and home purchase restrictions (JLL, 2018). Further, Chinese developers have accelerated new projects in an attempt to alleviate their cash flow issues, which has resulted in increased supply coming to market. U.S. tariff policies and rate increases have also impacted economic growth projections in China. Additional pressure to capital flows, and political uncertainty, has caused some alarm in cities like Guangzhou that are heavily reliant on exporting products. As uncertainty continues, it's likely that Chinese real estate prices will remain volatile.

According to JLL, the de-risking campaign being conducted in the country over the last year has slowed broad market growth in China, however government policy is still favorable toward its rental housing market. Investment activity in distressed assets is increasing, and several Chinese entrepreneurs are finding new ways to capture healthy returns despite the slowing market. Converting aging hotel properties into rental apartments has been a strategy gaining in popularity because these assets have typically been situated in favorable locations, and market demand for small dwellings remains strong (JLL, 2018).

Ling Wei Tan and her team provided an excellent opportunity to learn from JLL's experiences and research in the region. The visit to JLL's Asia Pacific headquarters, one of the leading office environments in the world, concluded the illuminating visit to Shanghai. Many site visits and presentations over the four days were instrumental in deepening the understanding of how the industry is being influenced in another part of the world. Baker students thank everyone involved in making their learning experiences successful.

CORNELL ASIA REAL ESTATE SOCIETY

Cornell Asia Real Estate Society (ARES) hosted the club's 2018 Symposium in collaboration with the Cornell Club of Shanghai. The meeting discussed the influx of international brands, and the economic impacts of the Summer Olympics and Shanghai Expo.

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Domestic Trek: Los Angeles, California

TUSTIN LEGACY

On the first day of the Baker Program's Los Angeles trek, students visited Tustin Legacy, a 1600-acre development that is among the largest undeveloped land in Southern California. This site was constructed and commissioned shortly after Pearl Harbor as a Lighter-Than-Air (LTA) facility to patrol the Pacific coastline with manned blimps. At one point, as many as 12 blimps operated from two hangars on the site. The hangars, two of the largest wooden structures ever built, are over seventeen stories high, 1,000 feet long and 300 feet wide. Listed on the National Register of Historic Places, the hangars are the only historical remnants of the site's prior use. Their interior and exterior features have been showcased in film and television productions over several decades.

During the Korean War, the base was re-activated as a Marine Corps Air Station for helicopter use and eventually became the country's first military air field solely dedicated to helicopter operations. After a total of 48 years in military activity, the base was closed in 1999 in accordance with the Base Realignment and Closure Act and placed under control of the Navy for disposition. After the Navy's original plans to sell the land to a private developer fell through, the City of Tustin acquired the site in 2006 and took the unusual step to serve as its master developer. The city is now in the midst of transforming this former airfield into a brand-new mixed-use community: Tustin Legacy.

The city has worked deliberately to manage the pace of development. Unlike private master developers who may come into a project with various sources of funds and a mandate to work quickly, city managers have recognized the importance of a measured approach to growth at the site. The city relies on proceeds from the sale of land to developers to fund future growth. Responsibility for the community master plan involves the installation of infrastructure to meet future demand. This cost of infrastructure is significant across the life of the project. Returns from the sale of entitled land with existing infrastructure have allowed Tustin Legacy to take shape.

Portions have already been developed or have developments currently underway. The first development occured in 2007 with the opening of "The District at Tustin Legacy," a one million square foot shopping center featuring a Target, AMC, Whole Foods, Costco, Lowe's, Bowlmor, TJMaxx, HomeGoods, Aki Home, and Union Market. The largest such shopping center to open in Orange County in a decade, the District will eventually support the 4,600 residential units and 7.3 million square feet of office, research and development space. In the summer of 2018, Lennar broke ground on the Levity project, a new development of 218 homes. Flight, a 470,000 square foot open office development inspired by the hangars and undertaken by a partnership of Lincoln Property and Alcion Ventures, will be the first office development to open at the site when construction is complete in the second quarter of 2019. This project will include a 12,000 square foot upscale dining hall in addition to a 7,000 square foot conference center.

Both images show World War II-era blimp hangars at Tustin Legacy.

As these components take shape, it is evident that the long-term focus and plan of the city is coming to fruition. In some ways, the project has already been validated by the construction of several offices and other buildings adjacent to the site. The city continues to manage growth while moving from project to project and estimates that it will take another fifteen to twenty years for Tustin Legacy to be entirely completed.

TOLL BROTHERS

The students continued their trek stopping at Altair, a master planned community in Irvine developed by Toll Brothers. Altair is nestled in the rolling hillsides and panoramic vistas of Orange County. This guarded community features resort-style amenities, distinctive architecture, and contemporary home designs that were recently added to the Toll Brothers' portfolio. The students started their tour by visiting the sales office where they met with the community's development team and other company representatives. The focal point of the sales office was a large center island with a touchscreen map displaying the entire development. Directly behind this display was a large window that provided a panoramic view of the community.

After speaking about the community and company, the Toll Brothers team led the students on a tour of some model homes and community amenities. Each model home was completely furnished to help potential homeowners envision the space and provide them with the opportunity to see how distinctive finishes may compliment furniture and the size of the space. With manicured lawns, in-ground pools, and outdoor eating areas, the model homes were the epitome of luxury living. The company's communities are known for the quality and abundance of amenities. In this case, the residents are provided with access to The Club, a 7,100 square foot recreation center with interior entertainment and recreational facilities as well as an outdoor lounge and entertainment areas with fireplaces, Bocce courts, and multiple pools with cabanas.

IRVINE SPECTRUM CENTER

On their final stop of the day, students visited the City of Irvine's premiere shopping and retail hub: The Irvine Company's Spectrum Center. The center includes over 150 top-notch tenants including retail stores, restaurants, and other retailers. It has been in continuous operation since 1995 and has undergone four primary phases of construction and expansion, but the most recent demands on the retail model have proven to be the most challenging and consequential for the firm.

Katie Dixon, director of marketing for the Spectrum Center, remarked to the students that the changing nature of retail has inspired the management team to focus the property's attention on providing a wider range of experiences for guests, rather than serving as a mere outlet for buying durable goods. For example, in addition to the Center's well-known ferris wheel and carousel, there is also an improv comedy club and a Dave and Buster's. Today, the center boasts more than 50 restaurants or food service providers, the most it has ever hosted on the property, providing guests with a variety of exciting options that lengthen average stays. Dixon also discussed the growing trend of higher-end retailers selling limited or exclusive editions of their products in smaller retail footprints, something that excludes the online channel.

Dixon added that leasing and property managers must remain cognizant not only of the tenant mix, but also of the locations and groupings of tenants so that the effect of the shopping experience is efficient and yields high per square foot revenues. One example of this strategy included moving Apple's retail store from a formerly obscure corner of the Center to a custom-built space referred to as the "glass box," which has become a primary focal point. Though Apple demands expensive tenant build-outs and lease concessions, Dixon felt this was necessary to keep the core active.

The Irvine Company's forward-thinking approach emphasizes creating thoughtfully designed shopping experiences. Joe Ibbotson, Director of Retail Operations for Irvine Spectrum, noted that the Center recently withdrew from kiosk-based retail, a standard fixture in many American malls. One student asked if he was concerned about the impact on revenues, to which Ibbotson replied that it was less about driving the bottom line and more about optimizing the guest experience. Hawkers or iterant salespeople pulling away guests can cheapen the retail experience. Ibbotson explained that everything the Spectrum Center incorporates - including the Spanish architecture style of the buildings (with exacting color standards), its wide walkways, and its child care facilities - is meant to convey that this location is the premier shopping experience in Orange County. If the site's 18 million visitors per year is any indication, then Irvine's trophy retail location has been successful.


HOTEL
PARKING

HOTEL AND MULTIFAMILY SITE VISITS

On the second day, Baker students visited three office to hotel conversions as well as a luxury apartment building. The three hotels were owned and developed by Seaview Investors, LLC (Seaview), a California-based real estate investment management company owned by Robert (Bob) Alter (SHA '73), the Chairman of the Dean's Advisory Board at Cornell's Hotel School.

The first two hotels, a Residence Inn by Marriott and a dual-branded hotel consisting of a Homewood Suites and H Hotel, were both located immediately adjacent to the Los Angeles International Airport (LAX) and had been recently completed. The Residence Inn is located in a former 1980s era office building that overlooked LAX's south runway. This hotel features 231 guest rooms and includes amenities such as an outdoor heated pool, fitness center, and tenants including a Starbucks Coffee and Jersey Mike's Subs. Students learned about how this was the first Residence Inn in the LAX submarket and how that provided significant opportunities for travelers looking for hotel amenities such as full kitchens. The site, however, is not without challenges. Residence Inns thrive on extended stays (five or more nights) while travelers staying in airport hotels typically only stay a night or two. In addition, given this building's past as an office building, the floor plates were larger than ideal for a hotel, resulting in large guest suites.

When Seaview purchased the property, the building still had office tenants. Students heard how buying out the existing tenant leases proved to be a longer and more expensive process than predicted. After the purchase, the company required the seller to remove the existing tenants as a condition of closing. After the tenants were removed and the sale closed, one of the biggest challenges that the company faced when re-developing this building was complying with the law requiring earthquake retrofitting of buildings of this age and construction. Bob explained this process, which included digging a deep trench around the exterior perimeter of the building and driving piles deep into the ground. A steel exoskeleton was then affixed to the structure so that the building would be held in place in the event of a strong earthquake. Seaview shrouded this exoskeleton on three sides of the building with decorative sheathing to enhance the hotel's exterior appearance.

Bob explained how, with two hotel flags operating under the same roof, Seaview is able to offer differentiated products to travelers while consolidating back-of-the-house operations. Indeed, Homewood Suites provides full kitchens for more budget-conscious travelers while H Hotels is Part of Hilton's higher-end Curio Collection and, as a result, provides more luxury and amenities, including an expanded gym as well as a private rooftop deck. Both hotels enjoy unusually high ceilings and more spacious layouts due to the buildings' original office designs.

The next visit was an AC Hotel located in the Beverly Hills area. AC Hotel is a relatively new brand operated by Marriott for young professionals. Baker Program students were toured around this hotel by Hannah Greenberg (SHA

Figure 1. Residence Inn Los Angeles LAX/Century Boulevard (Image Credit: Marriott.com).

Figure 2. Homewood Suites/H Hotel (Image Courtesy: Booking.com).

’11), who serves as Seaview’s Vice President of Hotel Development, and heard in detail the many challenges that Seaview faced when redeveloping this property. For example, the exterior of the building was protected and thus had to be maintained in substantially its original form. This resulted in significant design challenges and cost increases. In addition, like the dual-branded hotel, this building also required earthquake retrofitting. However, students heard how the solution used with the dual-branded hotel – the steel exoskeleton – could not be utilized in this case given the protected status of the building’s exterior. Instead, Seaview had to cut a whole in the concrete slab on the first floor of the building in order to lower a compact pile-driver into the building’s basement where it would drill dozens of micro-piles to secure the buildings. With the basement’s low heights and the area’s construction regulations permitting construction only at certain times, this was a slow and arduous process. Bob and Hannah cautioned students on the uncertainties involved in the cost and timing of retrofitting. Their engineer suggested that it is wise to calculate the costs associated with rehabbing a concrete building before purchasing.

Another challenge Seaview faced at the AC Hotel was the installation of the rooftop pool, which required significant reinforcement to the floor immediately below and resulted in lower ceiling heights on that floor. The pool and rooftop deck are essential to enjoying the views the Hollywood hills and many Los Angeles-area landmarks. Due to these challenges, completion of the hotel was delayed many months, with opening scheduled for the day following the tour.

The final visit of the day was to Ten Thousand, a 40-story, 283-unit luxury apartment building that is also located in the Beverly Hills area. The building is owned by Crescent Heights, a vertically-integrated real estate firm that specializes in the development and operation of architecturally distinctive residential high-rises in gateway markets across the United States. Bruce Menin, a principal of Crescent Heights, and friend of the Baker Program, provided a rare and exclusive tour of this property where rents start around $10,000 per month and increase up to $65,000 per month for the penthouse.

Ten Thousand represents a unique vision that provides sophisticated design (the building was designed by Handel Architects), high-end finishes, and resort-style amenities (including indoor and outdoor amenities comprising: two pools, spa, tennis and basketball courts, complementary continental breakfast, residents’ lounge, state-of-the-art gym, exercise studios, movie theater, screening room, game room, boardrooms, and a one acre park accessible only be residents and their guests). At the time of the visit, the building was more than 90 percent occupied with a wait-list for certain units.

Technology lies at the heart of Ten Thousand. For example, many of the building’s services can be accessed via a proprietary app. Additionally, Ten Thousand, as well as all of

Figure 3. AC Hotel Beverly Hills (Image Credit: Marriot.com).


Figure 4. Ten Thousand (Image Credit: Crescent Heights).

the hotels that were visited, offer robotic butlers that provide deliver guests/residents with items such as bottled water, toothpaste, etc. The robotic butler is able to navigate the entire building enabling personnel to focus their energies on more important tasks.

MACFARLANE PARTNERS

Close to their hotel in downtown Los Angeles, students took the opportunity to get a walking perspective on surrounding projects. Downtown Los Angeles has historically been overlooked in terms of livability. The city has had difficult meeting the live/work/play demands of younger generations. Concluding the trek, the class began with a site tour led by Robert Lathan, a senior associate at McFarlane Partners and a 2017 graduate of the Baker Program.

McFarlane Partners is in the midst of a $300 million development directly across from Pershing Square. The project consists of two separate but linked buildings. Park Fifth, a 24-story high-rise, will contain 347 rental apartments and 5,300 square feet of retail space. Directly adjacent is the Trademark, a seven-story mid-rise development that will house 313 rental apartments and 7,500 square feet

of retail space. Scheduled for completion in the coming months, students walked through the properties with the superintendent, learning about the challenges he faced while viewing construction as well as several recently finished units. Lathan also gathered the students in the site's construction office to discuss the project and its complex capital stacks.

Once open, the units at both Park Fifth and the Trademark will seek to meet the growing demand within the Downtown Los Angeles market for luxury apartments. Young professionals continually seek to live closer to work and take advantage of a growing list of bars and restaurants that are beginning to populate the area. While both buildings will house significant amenities, Park Fifth will include a 360-degree-view rooftop deck with an infinity-edge pool and cabanas, a fitness center, and a clubhouse with a bar and kitchen. Ample seating with TVs as well as a business center will compliment the onsite resident concierge services and dog walking and wash stations.

CBRE

The stop was the global headquarters of CBRE. Students met with Khari Buck, Director of Workplace Transformations

at CBRE and a 2011 graduate of the Baker Program, and Lewis Horne, CBRE's Divisional President for the Pacific Southwest including Southern California, Hawaii and Arizona. In addition to learning how CBRE remained at the forefront of the real estate services industry, students toured the LA office, a showcase of alternative workplace strategy and technology.

Horne explained CBRE's current focus with the presentation of several themes: The redevelopment of the historic core, the influence of global capital, the importance of high tech applications, the importance of technology companies, the necessity of sports facilities and entertainment, and the issue of homelessness. These trends are influencing the real estate industry. Some of the additional trends that the group discussed at length were the experiences in shopping that resonate with millennials, the importance of technology in offices, and the growth of the urban industrial sector. While shared offices and homes are commonplace, it was interesting to note Buck and Horne's suggestion that shared industriral spaces would be seen in the future.

Another highlight of the visit was touring CBRE's location, the world's first WELL Certified Office. CBRE focused on every aspect of the health and wellness of the company's employees. Starting with problem areas inherent in assigned space with little room for growth, but at the same time having underutilized space with inadequate technology, the Workplace Development Division focused on creating an effective space while leading in new office standards so that it created excitement in the users and eventually in the industry. Areas of attention included optimizing air quality through mechanical means and biophilic plants, maximizing natural sunlight with circadian lighting, and focusing on ergonomics down to the detail of the cork flooring for lumbar support. The retrofit covered 50 technologies for biological sustainability.

The office was also developed as a completely shared paperless space with on-demand use. A testament to its success was the speed at which users could reconnect hours after a major pipe burst without any interruption to daily operations. As a result, the workplace became a model for resilience in future designs, emphasized by its mobile and collaborative aspects. This has become part of CBRE's push to move from being a global leader in the real estate industry to all industries. This push to develop the space as "one's extended body" led to almost 100 percent user approval with employees feeling as if they were never "at work." We congratulate CBRE for this accomplishment, and thank both Khari Buck and Lewis Horne for their shared expertise.

RELATED CALIFORNIA

Students visited Related California in downtown Los Angeles, an affiliate of The Related Companies. The company is well-known for its sprawling Hudson Yards development currently underway on the west side of Manhattan. It is the largest private real estate development in the history of the United States. On the West Coast, Related California has completed more than 15,000 residences.

The company's office provides incredible views of the Los Angeles area and of the development site for The Grand, an over one billion dollar mixed-use development. Upon completion, this will include a 39-story residential tower, a 20-story hotel tower, a podium with 27,000 square feet of retail space, a public plaza, and underground parking. Students were greeted by Steven Oh, Senior Vice President for Development, and Tyler Bibbins, Development Associate, who described Related California's fourteen-year journey to bring The Grand to fruition. The project was designed by famed architect Frank Gehry and is located immediately across from the Walt Disney Concert Hall, which was also designed by Gehry. It is adjacent to other cultural and civic Los Angeles landmarks, including The Broad Contemporary Art Museum, the Civic Center, The Colburn School, and the Museum of Contemporary Art.

The residential component of the project includes a total of 436 apartments. Of these, 323 will be luxury units and 113 will be ultra-premium residences designed to compete with Ten Thousand near Beverly Hills. The hotel component of the project will consist of a 309-room Equinox Hotel. Related purchased Equinox, the upscale gym company, and is launching a new luxury hospitality brand around the marque with the first Equinox Hotel to be located in Related's Hudson Yards project.

With Deutsche Bank providing over $600 million in construction financing in late 2018, construction at the site only recently commenced after more than a decade of delays due to the complexity of the project. Oh and Bibbins described how development and stabilization of this large project will take another several years and that, once completed, The Grand will be a strategic addition to the booming downtown market.

The third day of the Baker Program's domestic trek was instrumental in understanding downtown redevelopment in one of the most important gateway cities in the U.S. The students were grateful for the opportunities facilitated by the many alumni and friends of the program and of Cornell University.

Real Estate Industry

Cornell
Baker Program
in Real Estate

36th Annual Cornell Real Estate Conference Recap

INTRODUCTION

On October 19, 2018, the Cornell Real Estate Council (CREC) hosted the 36th annual Cornell Real Estate Conference in New York City. The conference brought together hundreds of industry professionals, alumni and current students for a day of networking and panel discussions surrounding recent trends. Cornell's unparalleled alumni network within the real estate community facilitated a broad exchange of innovative ideas applicable across the industry, from design and construction to development and finance. Highlighting a "Focus on the Future," five panel discussions, including keynote Speaker Seth Klarman (CAS '79) and 2018 Industry Leader Award Recipient Kenneth Himmel (JCB-Hotel '70), shed light on some of the most pressing questions currently facing the real estate industry.

THE FUTURE OF RETAIL SPACE: HAS THE DEATH OF RETAIL BEEN GREATLY EXAGGERATED?

Moderator: Alan Riffkin (JCB-Hotel '88), Managing Director, Lazard

Panelists: Ken Bernstein, President and CEO, Acadia Realty; Terry Brown, Managing Partner, Asana Partners; Philip Krim, CEO, Casper; Liza Landsman (CAS '90), Partner, New Enterprise Associates (former President of Jet.com)

The retail sector has faced significant challenges over the past few years. The rise of e-commerce and changing consumer preferences have forced retailers, owners, and investors to adapt in a rapidly evolving marketplace. Some of the most prominent national retailers have failed to adjust to this dynamic retail landscape. Toys R Us, Sears, and RadioShack are among the many legacy retailers who have announced store closures or bankruptcy filings. Panelists discussed if the often discussed "Retail Apocalypse" has been greatly exaggerated?

Despite challenges in the industry, many retailers, owners and investors possess an encouraging outlook on the sector. At this year's Cornell Real Estate Conference, industry leaders shared promising sentiments regarding the future of retail. The collapse of legacy retailers has dominated market headlines and created false and sometimes misguided perceptions of the retail marketplace. E-commerce has emerged as a large disruptor of the retail sector concerning the real estate industry leading to the question of whether shopping will exclusively transition to online. Amid the recent store closures and bankruptcies, however, many physical retailers and landlords have been able to achieve success and thrive in the market.

Physical retailers have adopted new and innovative strategies based on consumer preferences to attract customers and improve the experience component of stores. The panelists believe there is a profound focus on connecting with the consumers and creating authentic experiences. Today, the most successful retailers are smarter and better capitalized while real estate investors are investing in prominent and historic locations to draw the most active and influential retailers. Digitally native brands,

Figure 1. The 36th Annual Cornell Real Estate Conference begins. Participants from left to right: Alan Riffkin, Liza Landsman, Terry Brown, Ken Bernstein, and Philip Krim.

Figure 2. Terry Brown, Ken Bernstein, and Philip Krim discuss retail innovation.

such as Warby Parker, Bonobos, and Outdoor Voices, have also recognized the value of brick and mortar stores.

Casper, an e-commerce company that sells sleep products, exemplifies how online retailers are embracing this trend. The company has committed to opening 200 stores over the next few years. Initially launched online in order to circumvent the highly insulated mattress industry, Casper was founded on the belief that the internet was the best channel to connect with the consumer. After establishing a strong and loyal customer base, Casper has found significant value in physical retail locations and believes opening retail stores is a logical next step in its growth and trajectory.

The year 2017 was uncertain for the retail sector as questions abounded challenging the existence of the retail market landscape. Retailers and owners have embraced these challenges resulting in newly successful approaches. Based on conversations of the panel and others at the Cornell Real Estate Conference, there are many encouraging signs for the trajectory of retail.

Figure 3. Participants from left to right: Alan Tantleff, Adam Flatto, Chris Kelly, and Peter Smith.

Figure 4. Roee Adler responds to a question from the audience.

HOW WE LIVE, WORK AND PLAY…IN 2028

Moderator: Alan Tantleff (JCB-Hotel '87), Senior Managing Director, FTI Consulting

Panelists: Roee Adler, Chief Product Officer, WeWork; Adam Flatto, President and CEO, the Georgetown Company; Chris Kelly, Co-founder and CIO, Convene; Peter Smith, Director of Global Real Estate, Bloomberg

Real estate professionals take a sober interest in future trends because their products are inherently durable and long-lasting. Decisions made in the design and development phase, indeed all phases, will be passed on to future tenants and owners. A priority of developers is to market products that appeal to the changing demographics of the workforce. With the uncertainty of near-term transportation and retail behavior, flexibility in the uses of space has increasingly become an important consideration.

The diversity of the panelists was a tribute to the wide-ranging implications of future uncertainty in real estate, but it was dominated by a refrain of "out with the old, in with the new". Bloomberg's Peter Smith noted that the world of corporate real estate is complacent with aging leadership and time-tested habits, but he also conceded that large corporations like Bloomberg cannot hope to understand the changing nature of office space without making allowances for the input of young professionals who will ultimately use the space. Leaders in corporate real estate must be stewards of their company's assets, and by extension, their company's culture. Smith acknowledged that the best talent is coming from universities. To acquire that talent, corporate real estate professionals must cultivate an environment that offers competitive amenities and social benefits.

This environment is where WeWork's Roee Adler, a native of Israel with a self-described "inherent disrespect for authority," excels. WeWork's business is modelled around the behavior of the next generation of office workers demanding a higher quality of life and greater access to amenities within the workspace. While traditional offices are characterized by maximally productive spaces, Adler explains, "we try to create spaces with greater purposes." An office designed thoughtfully with consideration of the well-being of its users can promote emergent ideas serendipitously. The commingling of people in an office is in stark juxtaposition with the stuffy cubicles of yesteryear. As Adler explains, "people thrive when they are around other people."

Adam Flatto of the Georgetown Company agreed with that sentiment. He described a hospitality trend in which hotel operators are hoping to get business travelers out of the solitude of their suites and into the common areas of the hotel. Consequently, designers of new hotels catering to business travelers are designing smaller guest rooms with shared amenities. Typical guestrooms are around 330 square feet, but Marriott's Moxy line of hotels features rooms half this size that are more technologically advanced and appealing to the recreational needs younger travelers.

Chris Kelly of Convene elaborated on the expectations of the younger demographic entering office spaces, suggesting they may, as "digital natives," not know anything different. Millennials and Generation Z office workers have been using smartphones and personal computers for the majority of their lives and often depend on integrated technology to drive their productivity. As Kelly notes, however, the fact remains that anyone can integrate with the changing behavior of office work. The global nature of business has created a class of office employees that work remotely or travel often, such as those in business development or sales. Adler emphasized these "digital nomads" as a major factor in WeWork's success. Companies with significant office assets discovered that WeWork presents an opportunity to greatly economize how office space sits on these companies' balance sheets. Prior to the advent of coworking spaces, office space was grossly underutilized.

The changing nature of how we live, work, and play factors significantly into corporate decision-making as companies seek to redefine their culture–or perhaps their retail models. On the public side, however, cities ought to be continually adapting to these trends with planning and incentives. The most iconic American brands are uprooting from the suburbs and moving to cities in order to attract the best talent. Cities would be wise to become flexible to changing behavior if they hope to remain relevant.

VENTURE CAPITAL AND TECHNOLOGY

Moderator: Clelia Peters, President of Walburg Realty, MetaProp

Panelists: Meghan Cross Breeden HumEc '08, Partner, Amplifyher Ventures; Marshall Cox, Founder and CEO, Radiator Labs; Raffi Holzer, CEO, Avvir; Edward Liew (MPS '09), Senior Director, DivcoWest

The panel started off by highlighting proptech, a term that is often misunderstood. As noted by the panel, proptech includes the use of technology in any aspect of the construction, operation and maintenance of the built environment. One panelist used the term "from dirt to disposition" to explain what is encompassed by the term.

The panel highlighted that technological advancements in the building industry provide immense opportunities for investment. Components that make certain technologies possible, such as sensors and lasers, are cheaper today and readily available. Data exchange platforms also have fewer limitations, allowing for greater ease in data collection and transfer. This has great implications for the construction industry, traditionally one of the least innovative industries in the U.S.

The panel noted that because the traditional workforce is beginning to retire, more space is being created for new generations of construction workers adept at using technology. The industry is also seeing disruption from entrepreneurial-minded individuals entering from the outside of the industry with innovative ways of solving problems. The panel cited the case of Urban Umbrella, which has become an alternative to the traditional scaffolding widely used throughout the construction industry since the 1950s. The technology was created in a design competition sponsored by former NYC Mayor Michael Bloomberg to reimagine the traditional and unsightly sidewalk shed often seen throughout large cities. After winning the design competition in 2010, the company created a prototype which lead to it receiving millions of dollars in venture capital funding.

The panel discussed the various challenges of adapting technology. Regulations in many cities affect the usage and implementation of these types of new technologies. For example, the use of drones, which has great potential to affect the built environment, is often restricted in heavily-populated urban areas. Another challenge of new technologies is the need to prove efficiency before scaling. In the case of Radiator Labs, founder Marshall Cox

Figure 5. Participants from left to right: Clelia Paters, Raffi Holzer, Meghan Cross Breeden, Edward Liew, and Marshall Cox.

noted that it was initially a challenge for him to approach commercial real estate companies. Despite this, he was able to foster strategic relationships with local universities. Substantial reductions in the heating costs for older dorms allowed him to approach established commercial real estate companies with proven results.

Globally, the proptech industry is expected to reach $20 billion by 2020. Many investment and venture capital firms are seeing the potential for technology in all industries related to the built environment. The panelists noted several elements that can aid in the expansion of the proptech industry. The ability of startups to collaborate with established commercial real estate firms on finding creative ways to solve specific industry problems is essential. Overall, the panel provided unique insights into the unlimited potential of technology.

KEYNOTE SPEAKER – ONE ON ONE DISCUSSION WITH SETH KLARMAN (CAS ’79)

Moderator: David Hodes, Managing Partner, Hodes Weill & Associates

The Cornell Real Estate Council was pleased to welcome alumnus Seth Klarman (CAS ’79) to the 36th annual Cornell Real Estate Conference as the keynote speaker. Mr. Klarman is the CEO of The Baupost Group, a privately held investment management company with approximately $30 billion in assets. Mr. Klarman has been at the helm of Baupost since its founding in 1982, and is widely recognized as one of the most successful practitioners of value investing. Not known for speaking publicly and participating in numerous interviews, Mr. Klarman sat down for a one-on-one discussion with David Hodes, Managing Partner of Hodes Weill & Associates.

Mr. Klarman began by discussing how he was first drawn to value investing. Throughout his studies it was apparent that the idea of an efficient market was largely incorrect. Opportunities exist within markets to take advantage of pricing discrepancies brought about by events that clouded the true value of many enterprises. This often leads one to unpopular or overlooked opportunities granting “margin of safety,” a term coined by the “father of value investing” Benjamin Graham, that allow for assets or firms to be purchased at a discount to intrinsic value. In other words, as Mr. Klarman put it, “why wouldn’t I buy a dollar for fifty or sixty cents?” While these types of investments typically unfold in distressed or ignored areas of a market, value investors in the mold of Mr. Klarman see low risk opportunities. From a real estate perspective, value investing, among many aspects, is aligned with the idea of buying an asset for less than the replacement cost.

Figure 6. Seth Klarman, left, and David Hodes, right, discuss value investing.

After these points, Mr. Hodes invited Mr. Klarman to discuss the current market. They discussed lessons learned from 2008 and the correction of today's market. Mr. Klarman noted that, while you can worry from the top-down, you must always invest from the bottom up. The fundamentals of a deal should not change relative to the overall market. If an opportunity makes sense on an individual basis, the investment is merited. He noted that despite the current market being overextended on a cyclically adjusted basis, this is not the case nominally. Interest rates are still low, a result of policies that were successful in stemming the fallout from 2008-2009. As we move forward in what has seemed like a "benign decade" characterized by low defaults, narrowing credit spreads, and potential inflation, Mr. Klarman pointed to the writings of economist Hyman Minsky, specifically to his point that sustained periods of stability eventually lead to periods of high volatility. Recently, this has transpired internationally, and while that volatility has largely shied away from U.S. markets, a tipping point will come. According to Mr. Klarman, there are more dubious offerings today than ever. As large VC funds continue to grow ever larger, e.g. Softbank, things could change for the worse.

As Mr. Hodes steered the conversation more towards Baupost's real estate investments, Mr. Klarman continued to reference potential downturns, stressing that while bottoms are hard to find, the important thing is to buy on the way down. Baupost's flexible mandate allows it to move money to the best opportunities regardless of asset class– and sometimes that means holding significant amounts of cash. When it comes to real estate, Baupost first entered the market in the wake of the S&L crisis. It realized that opportunity existed from the pools of loans being sold off by the Resolution Trust Corporation. This has led to Baupost's continued involvement in real estate over the last twenty-five years. When pushed by Mr. Hodes to answer whether real estate is still a value proposition in today's market, in true value investor style, Mr. Klarman responded that the externalities of individual opportunities always exist, despite market conditions.

Asked if there was any advice he may have for students in the audience interested in a career in finance, Mr. Klarman stated the investment business, invigorating and meritocratic, is bigger and more competitive now than ever and requires a 24/7 dedication. The investing profession, he said, is wrongly portrayed and encouraged its pursuit. When Baupost seeks talent, it looks for team players, stating "nobody's name is on the door". Outside the box, ideational thinking should accompany strong ethical foundations. Being "intellectually honest" is essential.

In closing, Mr. Hodes asked how value investing might change in the future. Upon reflection, Mr. Klarman stated that the core idea of value investing, a "basic value concept," is the idea of mean reversion. This idea is less applicable today, however, due to market disruptions from technology. Technology has the potential to change markets faster than humans may be capable of adapting. This will create problems in the future, but also potential opportunities. As a value investor, it is better to have a few well-founded opinions, not opinions on everything.

KENNETH HIMMEL (JCB-HOTEL '70) – RECIPIENT OF CORNELL REAL ESTATE REVIEW'S 2018 INDUSTRY LEADER AWARD

Moderator: Richard Baker (JCB-Hotel '88), Governor and Executive Chairman, HBC

Each year at the Cornell University Real Estate Conference in New York City, the editors of the *Cornell Real Estate Review* honor a leader who has made a demonstrable impact on the real estate industry at a global scale, as well as a service-minded contribution to society. The 2018 recipient of the Industry Leader Award was Kenneth Himmel (SHA '70), the President and Chief Executive Officer of Related Urban, a developer of large-scale mixed-use properties, as well as the Managing Partner of Gulf Related, an Abu Dhabi based joint venture between Related Companies and Gulf Capital.

During his distinguished career, Mr. Himmel has led significant real estate developments throughout the world, including Hudson Yards and Time Warner Center in New York, New York; CityPlace in West Palm Beach, Florida; Related Santa Clara in Santa Clara, California; Water Tower Place in Chicago, Illinois; and The Galleria and Central in Abu Dhabi, UAE. These projects have become destinations in their own right and have enhanced the communities in which they are located.

After accepting the award, Mr. Himmel engaged in a lively discussion with Richard Baker (SHA '88), the Governor and Executive Chairman of Hudson's Bay Company as well as the namesake benefactor of Cornell's Baker Program in Real Estate. This discussion touched on numerous subjects, including Mr. Himmel's start in the real estate industry, his experience developing the Time Warner Center, and the characteristics of successful real estate developers. Mr. Himmel first reflected on his education and early career in the real estate industry. He explained how he developed a deep interest in hospitality that led him to Cornell's Hotel School. Mr. Himmel subsequently worked for a Boston-area developer on hotel projects in the Boston and New York markets before moving to Cabot, Cabot & Forbes, a prominent real estate development firm, where he received his first significant assignment working on the Ritz-Carlton Hotel at Water Tower Place. Mr. Himmel recounted how he sought this assignment and encouraged young professionals in the real estate industry to take the initiative to forge their own career paths.

At Mr. Baker's urging, Mr. Himmel discussed the complex development process for the Time Warner Center, a 2.8 million square foot mixed-use project. The Time Warner Center is emblematic of the developments Related undertakes: projects in markets with high barriers to entry that limit competition and raise standards. While now considered one of the preeminent developments in Manhattan, the company faced a number of challenges during the development process, including a short period that required around-the-clock work in order to finalize its proposal, the need to secure a lead tenant as part of this proposal, and the September 11th attacks occurring during construction of the project. This project, Mr. Himmel mused, was indicative of the fact that for each "up" a developer experiences during a project there will be four or five "downs."

Mr. Himmel next reflected on the characteristics of successful developers. Developers must be smart and obsessive about details. Further, developers must build meaningful relationships with other stakeholders, including tenants and municipalities. With respect to tenants, Mr. Himmel emphasized the importance of developers understanding tenants and their businesses while, with respect to municipalities, Related seeks "win-win" outcomes and avoids litigation as a tool to achieve its objectives. Additionally, developers must possess good judgment when confronting risks in the real estate development industry. To mitigate these risks, Mr. Himmel recommended that developers do all of the necessary homework on deals and stay up-to-date on industry trends. Finally, developers should possess superior taste–which cannot always be taught–and be well-traveled. Mr. Himmel relayed to the audience how many family vacations throughout his life involved visiting buildings and other areas with his family in tow in order to derive inspiration for current or future projects.

Mr. Himmel is truly a worthy recipient of the Industry Leader Award. His industry accomplishments are legion and his dedication to Cornell includes serving on the Hotel School's Advisory Board and as a mentor to Cornell real estate students. The Cornell real estate community thanks Mr. Himmel for his many contributions to the real estate industry and university, and we wish him and Related continued success in the future.

DESIGN MORE IMPORTANT THAN EVER

Moderator: Robert Balder (AAP '89), Director of AAP NY, Cornell University

Panelists: Kate Bicknell (AAP '99), Vice President, Oxford Properties; Gary Handel (AAP '77), Founder and Managing Partner, Handel Architects; Jerry Zeitner, Chief Operating Officer, The Gettys Group

With advances in technology disrupting every sector, intelligent design is a driving factor in attracting and retaining tenants and building user traffic. The fourth conference panel explored the importance of design in moving the industry forward, whether it be the residential sector evolving to attract millennials, offices shifting to house co-working spaces, or warehouses incorporating new technology to adapt to the needs of e-commerce.

Figure 7. Fom left to right: Jennifer Spritzer (Baker/MBA '19), Richard Baker (JCB-Hotel '88), Kenneth Himmel (JCB-Hotel '70), Dustin Jones, Ershad Chagani (Baker/MBA '19), and Christopher Trahan (Baker '19).

Figure 8. Robert Balder (AAP '89), left, Kate Bicknell (AAP '99), center, and Gary Handel (AAP '77), right, discuss the future of design.

Technology is especially important in this context as it impacts how space is envisioned and utilized. With the inclusion of Augmented Reality (AR) and Virtual Reality (VR), architecture has evolved to showcase building designs as experiential software models. With the use of over 30 software programs, and aided with hundreds of plug-ins, designs are not just tweaked, but are also presented to clients and potential users through virtual reality platforms. This aids in user appreciation of space during the configuration process, leading to better inclusion and engagement. Today, the sector has moved from a consumer of design software to a producer. This has immensely helped in reducing the friction of the design process by improving stakeholder communication, helping them to instantly understand limitations and possibilities.

The availability of large amounts of analytical data has also been impactful, allowing decisions to be made on a much more granular level. Data sources span not only comparable projects already built, but also real-time feedback data loops in order to examine user behaviour. Open data and big data have created problems of overabundance; it is up to the industry to sort through and educate itself with the information. The art of the science is not just having the data but knowing how to utilize it.

While technology is a definite game-changer, the future of design is also heavily invested in the future user. The biggest disrupter among the various user groups is, of course, millennials. A major differentiator of this user group is the need to be alone, but never lonely. This has brought about the advent of shared space in almost every sector possible, where larger public spaces are combined with shared private spaces to offer a flexibility of sizes and usage possibilities. Convenience and amenities are in high favour among millennials and are usually valued more than the amount of per capita space provision, bringing about a cross-pollination of sectors and a mix of uses at every possible level. It was suggested, however, by the panel that the robustness of design for the built space should span generational differences, especially with aging populations.

Smaller households and a competition for convenience have brought about a shift towards micro-spaces. Battling regulatory barriers and the cost of land in premium locations, in addition to an emphasis on better transport connectivity, the housing sector is attempting to satisfy micro-home demand. They provide less margin for error, necessitating precision in fabrication and construction. As a result, modular designs are perceived as a solution to bridge the gaps. It is evident that this is no longer a trend with the arrival of micro-hotels. As brands enter this market there is a renewed push in the hospitality sector towards more public spaces at the expense of private areas.

With such increases in density, however, nature has become even more essential as drivers of building typologies. The connection to green is necessary at all scales, from the individual space to urban design. Dense urban living is only made possible by the relief offered by open space. Consequently, design has responded at all levels by exploring green spaces through biophilic design in

Figure 9. Moderator Robert Balder (AAP ‘89), left, asks panelists Kate Bicknell (AAP ’99), center, Gary Handel AAP ’77), center, and Jerry Zeitner, right, about the inclusion of AR and VR in design.

site selection, setback terraces, or individual floors. Such design strategies have blended in well in branding spaces to give them unique identities and make them social media-worthy to lend an authenticity to a virtual vision.

Overall, the panel emphasized design aiding the revenue productivity of a space and recalled traditional lobbies and excess parking as design fallacies that weren't worth the cost. The ever-changing landscape needs expert management of risk and action towards a resilient future.

WALL STREET AND THE CAPITAL MARKETS

Moderator: Andy Jonas, Co-Head of Real Estate, Goldman Sachs

Panelists: Mark Fawer, Partner, Greenspoon Marder LLP; John Kukral, President and Chief Executive Officer, Northwood Investors; Darcy Stacom, Head of NYC Capital Markets, CBRE; Jonathan Pollack, Senior Managing Director and Global Head of the Blackstone Real Estate Debt Strategies

Our esteemed panel of Wall Street and capital markets professionals represent some of the largest and most influential real estate investment firms in the world. The panel gave valuable insights into key changes impacting capital markets, shifts in real estate fund structures, and future performance in the face of rising interest rates.

The panel kicked off with a discussion about the effects of increases in asset valuation on asset selection for investment managers, and on how the state of the real estate cycle has created pressure on equity investors to change strategies. The panelists all noted a trend in firms redefining the categorizations of value add and opportunistic assets. One panelist noted that while more money chases more expensive assets, broad return targets of around 20 percent have not changed. This market dynamic is causing the assets held in some value-add funds to look more like properties fit for an opportunistic strategy. A value-add fund that traditionally seeks light upgrades on properties, signs higher-credit tenants and sells on ten-year holds, might now shift towards riskier development-heavy investments held for longer durations than a typical opportunistic fund.

In addition to this shift on the equity side of real estate investments, all panelists noted a large increase in the number of debt funds over the past two years. Driven by strong returns, rising rates and a desire to be closer to first lien position, debt funds address growing appetites for lower risk and high upside (often double digit returns on an unlevered basis) without taking excess equity-like risk. The financing markets have become very competitive and the covenants that would be required until recently are often not attainable by lenders today. Panelists have seen higher equity contributions across several markets from investors, even in the face of .25 to .50 decreases in cap rates over the last year. Rising rates have also put pressure on holding periods as investors seek to sell properties bought at high valuations and financing becomes more expensive.

The panel finished by discussing the possible consolidation of managers as an after effect of the late cycle environment. Large pension funds have outlined desires to consolidate the number of managers in their portfolios during the last few years. The emphasis to limit the number of relationships is seen as the impetus for consolidation. To meet the desired investment styles and risk profiles of each large capital provider, funds might have to acquire new capabilities by recruiting other managers to gain competitive product offerings for clients.

Figure 10. From left to right: Andy Jonas, Jonathan Pollack, Mark Fawer, Darcy Stacom, and John Kukral.

Figure 11. Jonathan Pollack, left, discusses shifting investment strategies next to Mark Fawer, right.

HODES WEILL & ASSOCIATES

Cornell Baker Program in Real Estate

2018 Institutional Real Estate Allocations Monitor

INTRODUCTION

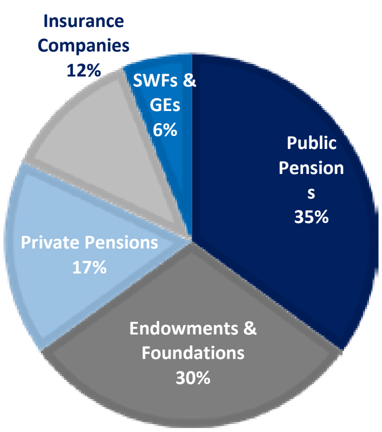
Cornell University's Baker Program in Real Estate and Hodes Weill & Associates are pleased to present the findings of the sixth annual Institutional Real Estate Allocations Monitor (the "2018 Allocations Monitor"). The 2018 Allocations Monitor focuses on the role of real estate in institutional portfolios, and the impact of institutional allocation trends on the investment management industry. Launched in 2013, the 2018 Allocations Monitor is a comprehensive annual assessment of institutions' allocations to, and objectives in real estate investments. This report analyzes trends in institutional portfolios and allocations by region, type and size of institution.

The 2018 Allocations Monitor includes research collected on a blind basis from 208 institutional investors in 29 countries. The 2018 participants hold total assets under management ("AUM") exceeding US$11.0 trillion and have portfolio investments in real estate totaling approximately US$1.0 trillion. Our survey consisted of 24 questions concerning portfolio allocations to the asset class, current and future investments in real estate, investor conviction, investment management trends and the role of various investment strategies and vehicles within the context of the real estate allocation (e.g., direct investments, joint ventures, private funds). We also included questions regarding historical and target returns as well as environmental, social and governance ("ESG") policies.

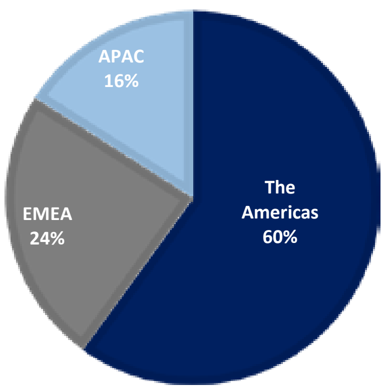
2018 Global Institutional Participants

208 participants in 29 countries representing US$11.0 trillion in AUM

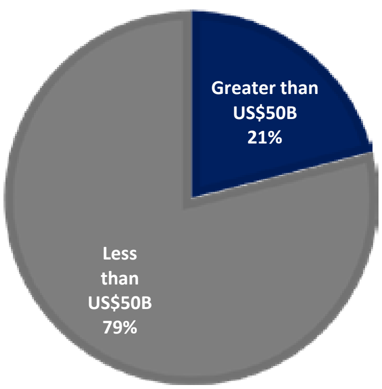
Breakdown of Participants By Type of Institution



Breakdown of Participants By Location of Institution



Breakdown of Participants By Size of Institution



1. **Target allocations to real estate in institutional portfolios continue climbing in 2018.** Average target allocations to real estate increased to 10.4 percent in 2018, up 30 bps from 2017 and up approximately 150 bps since 2013. While an increasing percentage of institutions are holding flat or decreasing their target allocations year-over-year, the 30 bps increase is consistent with the rate of change in each of the past five years (which has ranged from 20 bps to 40 bps per year). In 2018, 30 percent of institutions (up from 18 percent in 2017), decreased their target allocation by an average of 140 bps.

2. **Led by institutions in Asia Pacific and EMEA, institutions are forecasted to increase average target allocations over the next 12 months.** On average, institutions are expected to increase target allocations to real estate by 20 bps over the next 12 months. This increase can be largely attributed to institutions in Asia Pacific and EMEA regions, with each region forecasting increases of 40 bps, as compared to target allocations for institutions in the Americas, which are expected to remain constant.

3. **The value of institutional real estate portfolios grew significantly over the past 12 months.** A combination of appreciation, a rise in transaction volumes and an increase in capital commitments to real estate private equity vehicles, has contributed to a significant increase in actual allocations (i.e., percent invested) from 9.1 percent in 2017 to 9.5 percent in 2018. Due to the consistently strong performance of virtually all assets driving up the value of investable assets (the so called "denominator effect"), aggregate capital exposure to real estate has likely increased well in excess of 10 percent over the past 12 months.

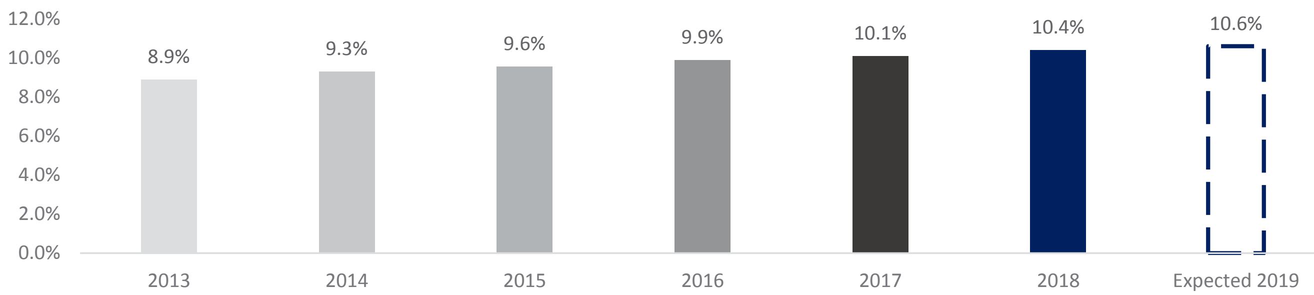


Figure 1. Weighted Average Target Allocation to Real Estate, All Institutions.

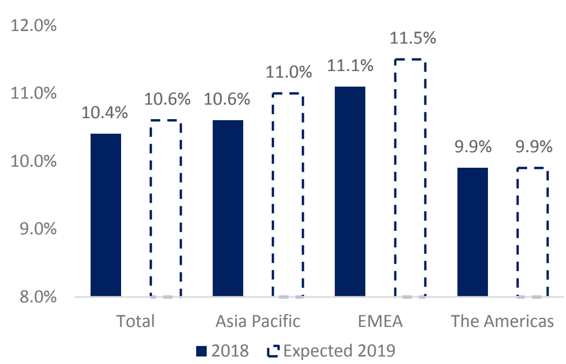


Figure 2. Weighted Average Target Allocation, By Location of Institution.

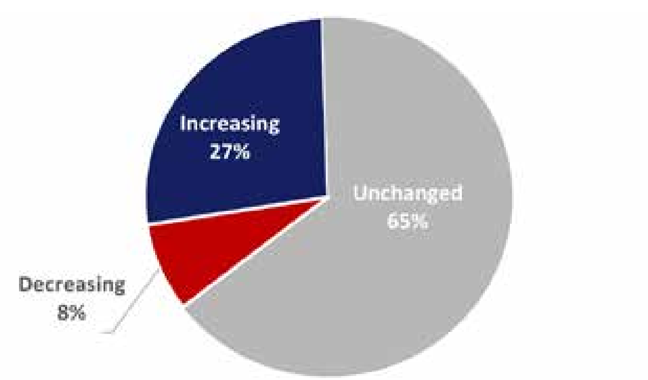


Figure 3. Expected Change In Target Allocations, All Institutions.

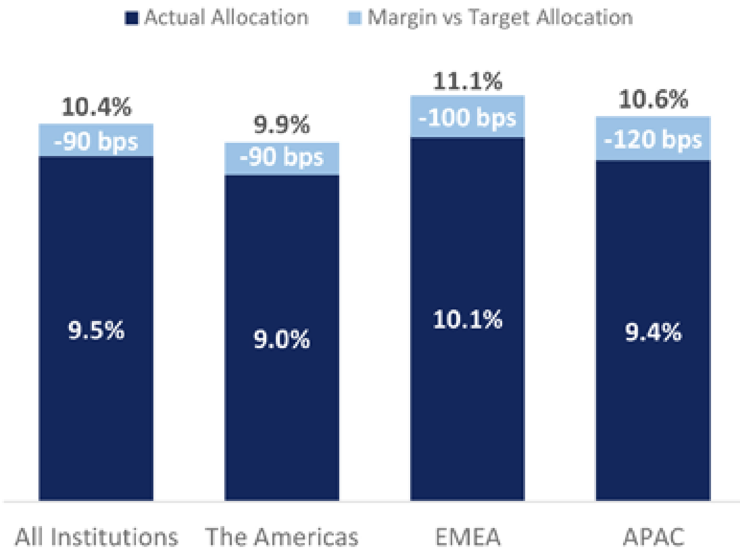


Figure 4. Actual Versus Target Allocation, By Location of Institution.

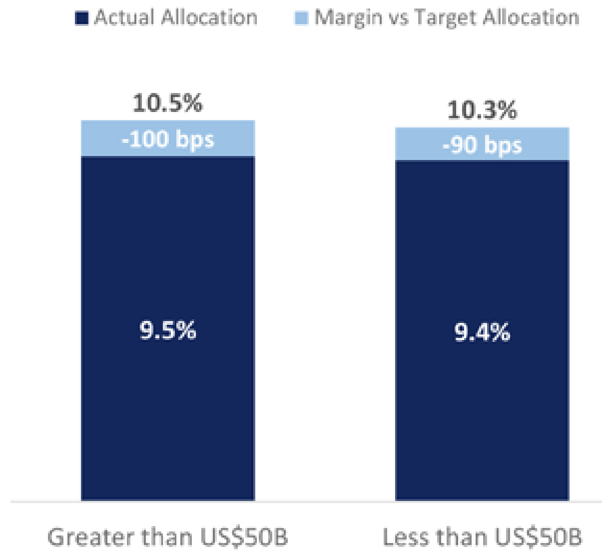


Figure 5. Actual Versus Target Allocation, By Size of Institution.

4. **Despite an increase in actual allocations, institutions remain meaningfully under-invested relative to target allocations.** While 92 percent of institutions report that they are actively investing in real estate, institutions remain approximately 90 bps under-invested relative to target allocations. Insurance companies are the most under-invested, while Endowments & Foundations are closest to their target allocations. Approximately 60 percent of institutions are under-invested relative to target allocations by an average of 200 bps

5. **After two years of moderating portfolio investment returns, performance increased in 2017.** Real estate portfolios generated an average annual investment return of 9.2 percent in 2017, up from 8.7 percent in 2016. This is consistent with industry-wide real estate returns, which trended upward in 2017, spurred by a rebound in economic growth which led to stronger operating fundamentals (i.e., rent and occupancy trends) across asset classes and geographies. Moreover, investment returns continue to outpace target returns by a meaningful margin over trailing one, three and five-years.

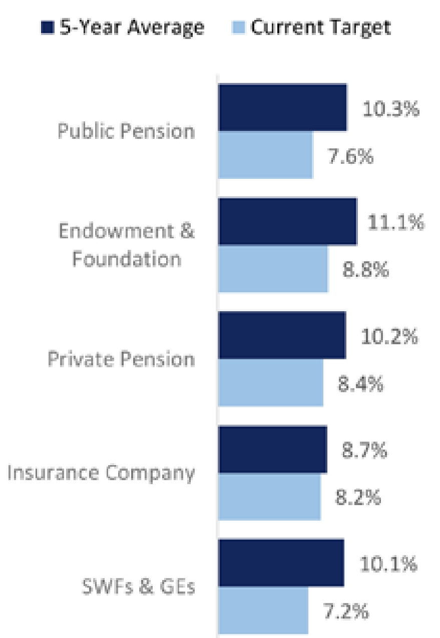


Figure 6. Target Versus Historical Returns, By Type of Institution.

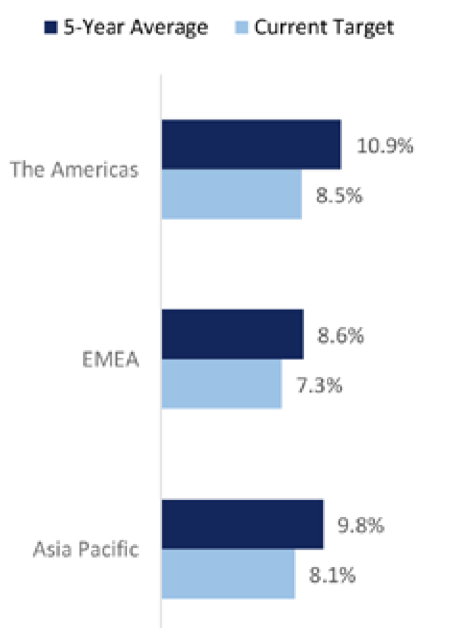


Figure 7. Target Versus Historical Returns, By Location of Institution.

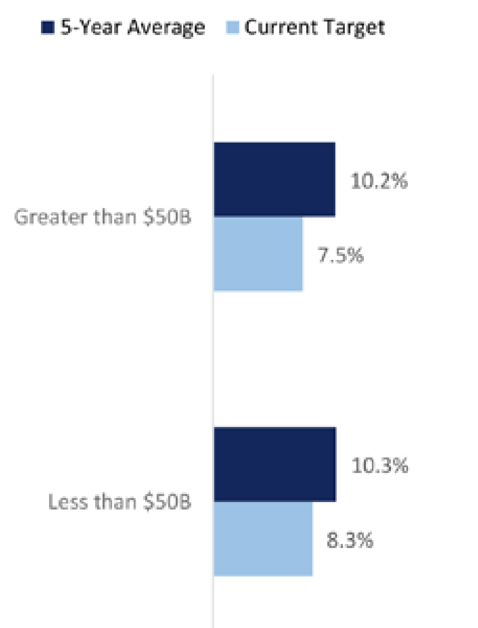


Figure 8. Target Versus Historical Returns, By Size of Institution.

6. **Institutional conviction for the asset class increased in 2018. Between 2017 and 2018, our "Conviction Index", which measures institutions' views of real estate as investment opportunities from a risk-return standpoint, increased from 4.9 to 5.1.** This follows four years of steady declines and comes as somewhat of a surprise, as investors continue to cite concerns regarding rising interest rates, asset valuations, and geopolitical risks, in addition to the perception of being late in the cycle (i.e., "late innings" for baseball fans). The increase in the Conviction Index was consistent across all regions (i.e., the Americas, EMEA and APAC).

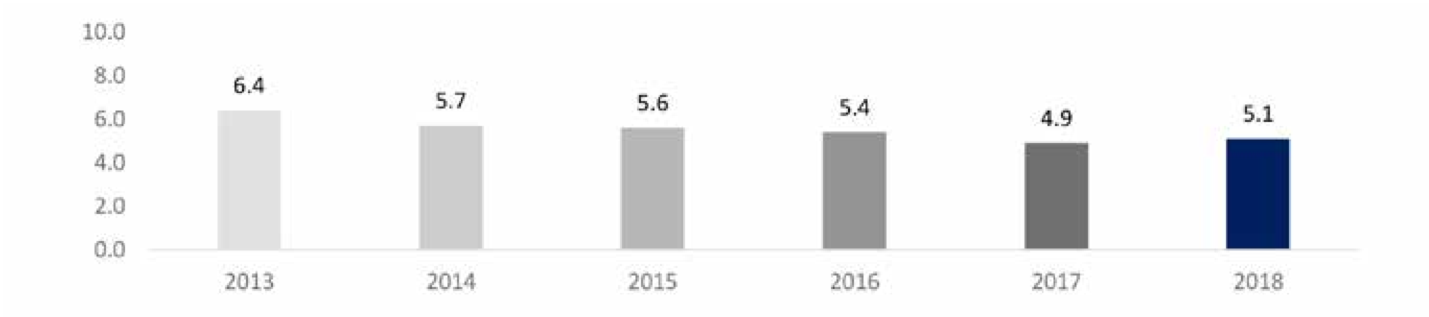


Figure 9. Conviction Index, All Institutions.

7. **Institutions continue to shift allocations to alpha-generating strategies, including value add investments.** Notably, approximately 90 percent of institutions reported that they are actively focused on value add strategies, as compared 63 percent of institutions that are actively focused on core strategies (which is down from 69 percent in 2017).

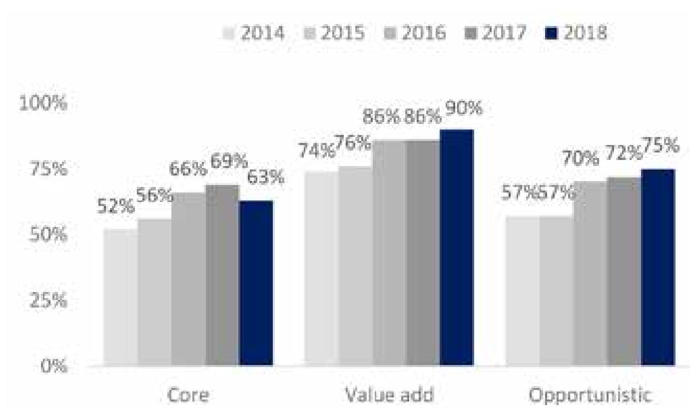


Figure 10. Risk Preference, All Institutions.

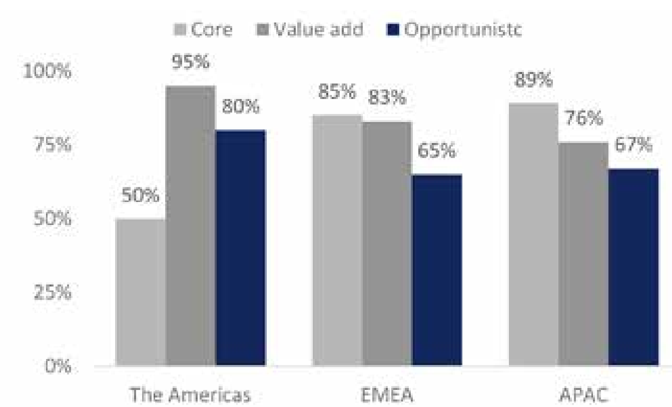


Figure 11. Risk Preference, By Location of Institution.

Figure 12. Risk Preference, By Type of Institution.

8. **Third-party managed assets under management (AUM) continues to trend upward.** Institutions are allocating the substantial majority (approximately 85 percent) of their new investment allocations to third-party managers. This trend, in combination with rising allocations and capital appreciation, is driving strong growth in assets under management for the investment and fund management industry. This is particularly the case for Smaller Institutions (i.e., institutions with less than US$50 billion in AUM), that do not have the resources to internalize management functions, as well as for institutions that are allocating investments cross border.

9. **Cross border capital flows remain strong, as interest shifts from investment in the US to Europe and Asia.** Despite the strong performance of US real estate over the past several years, interest in US-focused investment strategies appears to be waning. This has been compounded by currency hedging considerations for institutions in EMEA and APAC, as the US dollar has strengthened considerably year-to-date. Interest in Europe and Asia focused strategies is on the rise, and a notable trend is that APAC institutions have shifted their focus to regional strategies in Asia.

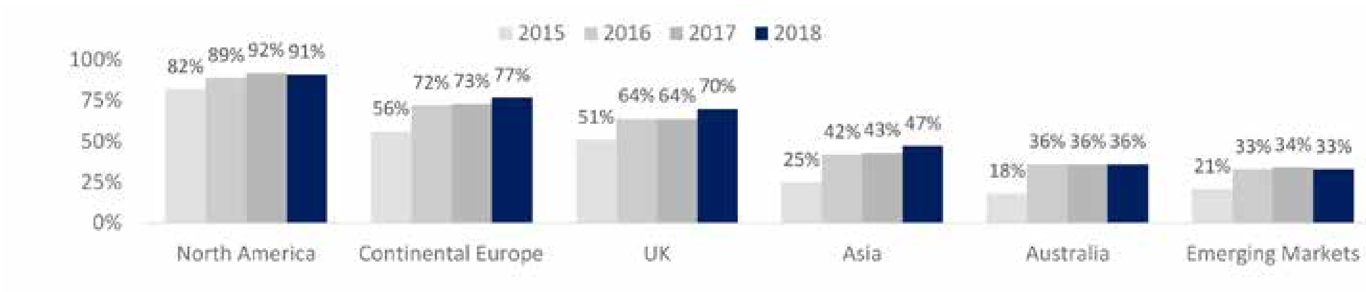


Figure 13. Geographic Focus, By Location of Institution.

10. **Closed-end funds continue to gain favor with institutional investors.** Approximately 93 percent of institutions are actively allocating capital to closed-end funds (up from 87 percent in 2017). While Larger Institutions continue to prioritize direct investments, joint ventures and separate accounts, 89 percent of which report being actively focused on closed-end funds, in particular for niche and harder to access strategies and geographies.

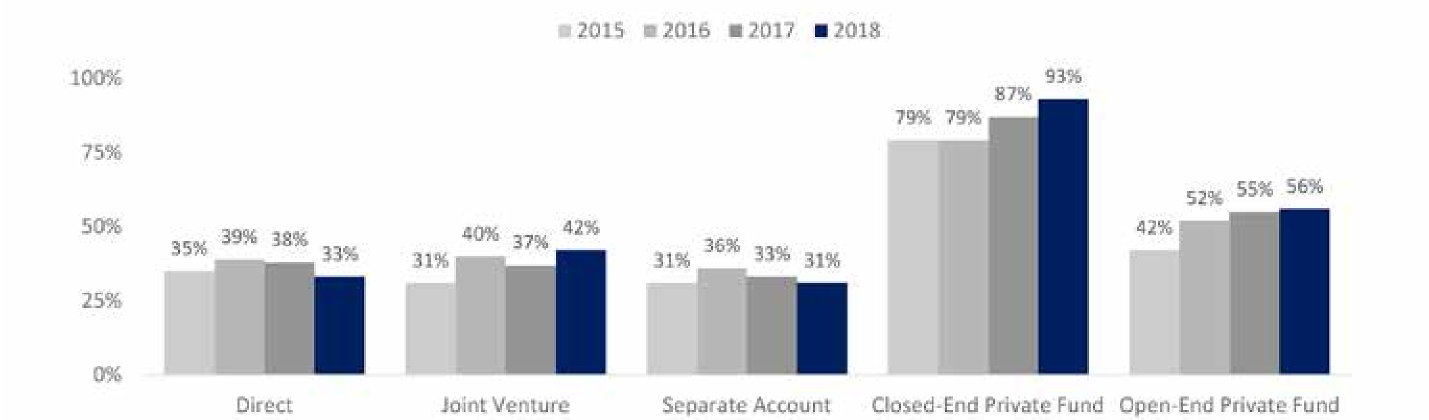


Figure 14. Investment Product Preferences, All Institutions.

The 2018 Allocations Monitor leverages the academic resources of Cornell University and the global institutional relationships and real estate experience of Hodes Weill & Associates. We hope this report provides unique insight into the institutional investment industry, serving as a valuable tool for investors in the development of portfolio allocation strategies and peer benchmarking of returns, and for investment managers in business planning and product development. With this goal in mind, please feel free to contact us with any comments, questions or suggestions.

We look forward to sharing additional insights and our perspective on the industry with you more directly in the near future. Again, we would like to express our sincere appreciation to everyone that participated in this year's survey.

Research Articles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A Taxonomy of Coworking Space: Manhattan, NYC

Author: Yaoyi Zhou

Yaoyi Zhou is a Ph.D. student in the Department of Design and Environmental Analysis (DEA). He holds a Master's of Architecture from Cornell University. Yaoyi is currently studying human behavior and design with minor concentrations in Real Estate and Organizational Behavior. He is interested in an academic career focused on emerging architectural phenomena and their impact on human behavior.

INTRODUCTION

The growth in the coworking inventory has accelerated over the past years, with more than 5 million square feet of new space flooding into the market in each of the past three years (Cushman & Wakefield, 2018). In 2018, over 200 coworking companies that operated in the U.S. had at least one location larger than 5,000 square feet. As competition increases, coworking markets enter periods of "specialization" in spaces of various size, business plans and clientele (Brown, 2016; Diduch, 2018), however, the lack of analysis of these characteristics make it difficult to understand the current supply of coworking space on the market.

Gandini's (2015) definition that "*Coworking spaces are shared workplaces occupied by different sorts of knowledge professionals, mostly freelancers, working in various degrees of specialization in the vast domain of the knowledge industry*" is growing in acceptability although the interpretation of "coworking" never stops shifting between "freelancer community" and "sheer office subleasing business." As the largest coworking providers continues to expand their portfolio at a dramatic pace, it is now more difficult to identify the difference between traditional shared offices and coworking spaces. The definition of coworking is becoming more ambiguous as the clienteles change so rapidly, with a decreasing ratio of freelancer tenants (CB Insights, 2018). At Bond Collective's five locations, only 10 to 20 percent of the space is dedicated to open coworking, and 90 percent of WeWork's space is occupied by private offices (Kessler, 2017). The meaning of coworking might already have changed as a significant number of space providers plan to scale-up their businesses by introducing more long-term private offices lease to sustain their cash flow.

New York City, especially Manhattan, is the most prosperous market for coworking space (Cushman & Wakefield, 2018; Moriset, 2014). For the first eight months of the year 2018, coworking space companies leased a total of 1.9 million square feet in Manhattan, which accounts for nearly 10 percent of all new leases in the year (Hall, 2018a). Manhattan coworking spaces occupied 10.7 million sf., or about 2.6 percent of the total office inventory (Figure 1). CoWorker.com, the largest online coworking space search website and coworking community, indicated that 176 coworking spaces existed in the great New York City area in November 2018. This study explores the common and different characteristics among the coworking spaces in different submarkets and brands in Manhattan in 2018.

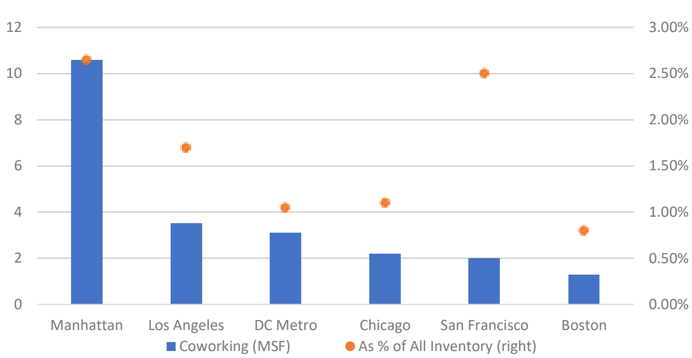

Figure 1: Coworking inventory in Gateway Markets (Cushman & Wakefield, 2018).

PRICE IN THE MANHATTAN OFFICE SUBMARKETS

Office properties and markets differ in the different areas of Manhattan. There the office spaces are concentrated in three major submarkets: Midtown, Midtown South and Downtown (JLL, 2018). Among the three markets, Midtown South experienced the most dramatic rent increase in the past decade. Google first leased space at 111 Eighth Avenue in 2006, paying in the mid-to-upper $30 per square foot. The company bought the space in the building for almost $1.9 billion in 2010, and the ripple effects followed. Facebook and other Silicon Valley companies boosted the tech companies' presence in this submarket, turning the former district of storage and showcase buildings into a new hub (Lash, 2015). In part due to Mayor Bloomberg's Five Borough Economic Opportunity Plan in 2009, the growth of companies in technology, advertising, media, and information, or "TAMI" industries, have driven the Midtown South market to a new height (Lash, 2015; Satow, 2014; Weiss, 2015). This has lifted the cost per square foot of Midtown South offices over the Downtown financial district since 2015, and the vacancy rate dropped to 5.4 percent in the third quarter of 2018 as a new post-recessionary low. The average asking rent of Midtown South office space is $83.57 per square foot, surpassing the Midtown market $76.60 and Downtown market $61.08 in the third quarter of 2018 (JLL, 2018). It is now the priciest office market in the nation. The TAMI expansion has made coworking spaces a viable option for many tenants. The dramatic rent increase in the Midtown South area makes the long-term leases that coworking companies signed before 2015 bargains. The question is where are the locations today? Where will they be tomorrow?

BUILDING CHARACTERISTICS

The characteristics of the host buildings are an important part of the price being paid by coworking companies, and this could reveal the potential stratification of coworking spaces depending on the clientele. Office building classification represents a subjective quality rating of buildings, which indicates the competitive ability of each property to attract similar types of tenants (BOMA International, 2018). Real estate managers understand the strength of the property by monitoring a combination of factors including rent, building finishes, system standards and efficiency, building amenities, location/accessibility, and market perception. "Class A" are the most prestigious properties competing for premier office users with rents above average for the area. "Class B" are properties competing for a wide range of users with rents in the average range for the area. The building finishes are fair to good, and systems are adequate, but the building does not compete with Class A at the same price. "Class C" are properties competing for tenants requiring functional space at rents below the average (BOMA International, 2018). Because no current study exists indicating the building classes of existing coworking spaces, the question arises what are the differences between the coworking spaces located in Class A, B and C buildings regarding membership plans and at what price?

COWORKING BRANDS: WEWORK VS. REGUS

With a focus to service large block tenants as its growth strategy, WeWork has surpassed J.P. Morgan to become New York's largest tenant (Hall, 2018). With a $2 billion investment from Softbank in Jan. 2019, the company was valued at a blended valuation at about $36 billion (Prang & Brown, 2019). Yet WeWork had difficulty in 2018. The company lost about $2 billion in 2018 and its largest backer, Softbank's Vision Fund, also expressed its concern that WeWork's model could leave it exposed if the economy weakens (Hoffman, Brown, & Farrell, 2018). As Softbank balked its planned $16 billion acquisition of WeWork at the end of 2018, the discussion of the future became controversial. Although WeWork has spent years marketing itself as a tech company which professionalizes in cultivating coworking culture, its business model was still considered by many analysts as an old-school office-leasing company like Regus, the other key player in shared office business (Brown, 2015).

Before WeWork formed, the service-office-space industry underwent a spectacular rise and fall when the tech bubble burst in 2001. The most common concern is that if the demand for office space and rent prices fall, WeWork could be stuck with its long-term lease obligations for years just as Regus was. While WeWork now operates 52 locations in Manhattan, Regus operates in 46 locations. Taking a closer look at the locations of the two companies, it is apparent that Regus's host buildings are slightly different from WeWork's. By investigating the difference between the coworking spaces' sizes, locations, and characteristics of the host buildings, it is possible to learn more about the difference and similarities between these two office subleasing giants.

METHODS: DATA COLLECTION AND ANALYSIS

The location data of coworking spaces was collected through the website CoWorker.com, which is the largest coworking space platform in the world. By December 2018, CoWorker.com was listing more than 6,000 coworking spaces in 158 countries, with 1719 spaces located in the United States. The 116 locations in Manhattan provide the ability to search each coworking spaces' website and check its existence, membership plans and prices. To compare

	Midtown	Midtown South	Downtown	Others
OFFICE MARKET (Q3 2018*)				
Current inventory	281,132,601	67,972,208	99,638,656	-
Overall vacancy	7.3%	5.3%	11%	-
Overall asking rent (gross $/sf.)	76.60	83.57	61.08	-
COWORKING SPACES (CS)				
Number of Coworking Spaces	42	42	20	7
Total Space occupied by CS (sf.)	2,576,322	1,713,395	1,243,269	81,547
% of total inventory	0.916%	2.521%	1.248%	-
Average size of CS (sf.)	61,341	40,795	62,163	11,649

"*" Note: Data retrieved from (JLL, 2018)

Table 1: Coworking location and the office market (Not Include Regus n =111).

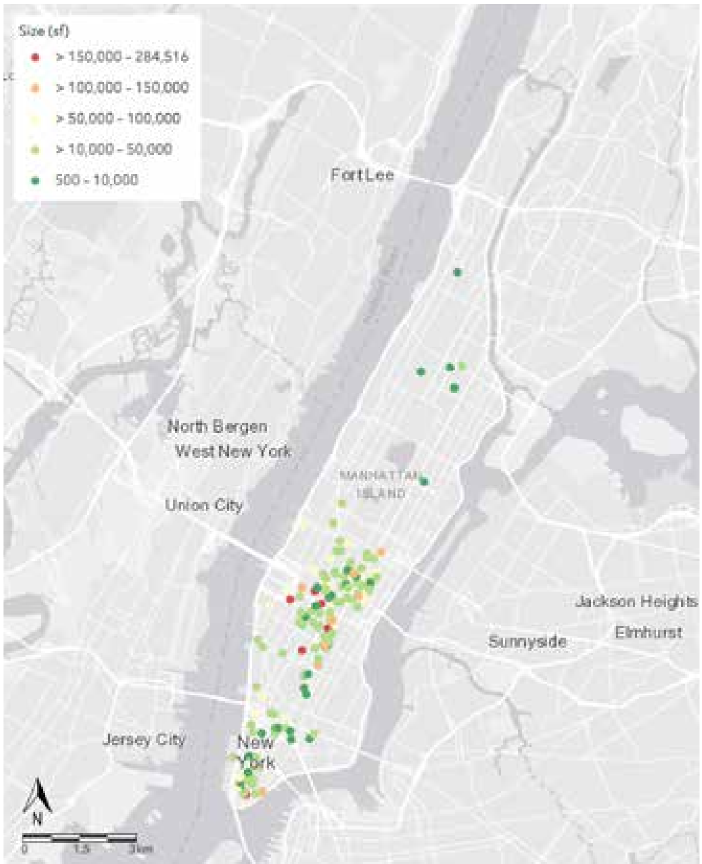

Figure 2: Location and size of coworking spaces (n=111).

building area, the area of spaces leased by the coworking space company, and the lease start date was also collected from the CoStar Database. Information about the lease term and the price of the leases was provided for some sites. The data was then analyzed in JMP Pro, a graphical statistical analysis application, and mapped in ArcGIS to study coworking spaces' spatial distributions.

RESULTS

Total inventory: The result shows that a 5,614,533 square feet are leased for coworking spaces in Manhattan in January 2019, not including Regus and other shared office companies. If the total square footage of Regus space is added, the number rises to 6,903,646 square feet. This is still less than the 10.2 million square feet estimated by Cushman & Wakefield (2018).

The inconsistency in the definition of coworking might explain the difference. If all coworking and shared office space is considered coworking space, it is easy to overestimate the market share of the coworking space. Not every square foot of space that a coworking company leases could be counted as coworking space. Earlier in 2017, IBM leased all of WeWork's space at 88 University Place, and Amazon leased all of WeWork's 122,000 square feet at 2 Herald Square. The result suggests that, if coworking space is defined as shared offices space which professionals and freelancers occupy, the current estimation of coworking spaces might be much smaller than the estimations made in previous reports (Gandini, 2015). While WeWork continues to sign large chunks of office space and increase its focus on the enterprise business and long-term leases, the uncertainty around the terminology of coworking evolves and makes the estimation of coworking space market share more difficult.

Regarding lease start time, the oldest coworking spaces in Midtown South opened in 2003, while the oldest coworking space in Midtown started in 2009. The number and average size in both Midtown and Midtown South has increased in recent years. The coworking spaces in Downtown are the newest and the largest in size among all submarkets, with most of them larger than 50,000 square feet. Figure 3 demonstrates that, among the current opened coworking spaces, the majority of coworking spaces started their leases after 2011. The more recent starts occupy larger square footage. Most spaces that occupy an area larger than 50,000 square feet were leased after 2015.

Host buildings: Our data shows that there are 37 coworking spaces located in Class A office building, 43 in Class B, 25 in Class C and 7 in mixed-use property's retail or

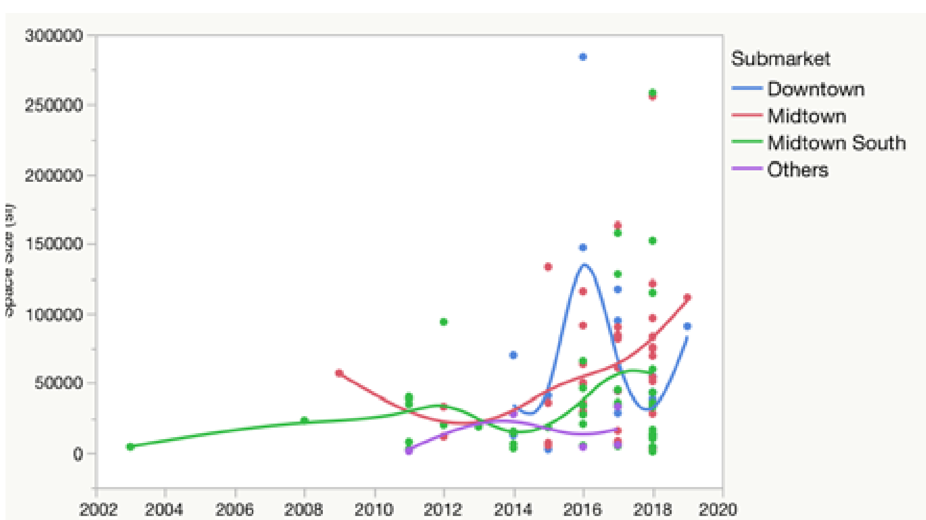

Figure 3: Space size and the lease start year in different submarkets.

residential spaces. As the retail rents across Manhattan dropped 25 percent in the last three years, retail property landlords adjusted to the rapidly changing environments (Hall, 2018b). Coworking spaces became an option for some retail property landlords who wanted to control vacancies. Taking a closer look of the markets, the data in Table 2 indicates that coworking spaces are located in significantly smaller host buildings in Midtown South. The host buildings in Midtown South are all Class B and Class C, while those in Midtown and Downtown area are mainly Class A. The differences in building class might reflect the difference in clientele. It is reasonable to expect that the clients who enroll in coworking memberships are diverse when considering their occupations.

While the average estimated rent of the host buildings in Midtown South is lower than Midtown, the average price for a private office plan is the highest in Midtown South among all submarkets. The high price for private offices reflects that shortage of quality office space supply and high demand in this area. It also suggests that in Midtown South, coworking serves as a strategy to increase the cash flow for the host buildings in Class C. Thriving coworking spaces might contribute to the rise of office rents in Midtown South, which means that companies looking for long-term leases face even fewer choices.

Percentage of space occupied by coworking: Figure 4 suggests that host buildings with Rentable Building Area (RBA) less than 500,000 square feet are more likely to lease a large portion of the building to coworking companies. This corresponds with the idea that signing long-term leases is a strategy by property owners to control the vacancies. Since its peak of 92 percent in 2000, the current occupancy in the top 50 markets is roughly 85 percent according to the research firm Green Street Advisors (Grant, 2018). As WeWork's recent expansion involves more and more large size spaces, it is timely to explore how landlords benefit from leasing large space to coworking companies. Cushman & Wakefield (2018) studied 17 transactions with coworking tenants from the past two years, and found that there is a slight negative relationship between the reported cap rates and the proportion of a building's square footage allocated to coworking. Its study suggests that the market currently seems to be comfortable with 15 to 30 percent of a building being allocated to a coworking provider with relatively strong credit, but a percentage above that may be viewed adversely. The result of this study indicates that 43 out of 111 coworking spaces in Manhattan now occupy more than 30 percent of their host

	Midtown	Midtown South	Downtown	Others
HOST BUILDINGS				
Average RBA of the host building (sf.)	456,319	120,641	638,718	43,475
Average stories of the host building	24.12	9.93	26.8	8.71
Average class of the host building*	2.43	1.58	2.6	1.67
Average year the host building was built	1944	1917	1938	1953
Average COSTAR estimated rent ($/sf.)	67.87	59.76	56.25	52.25
COWORKING SPACES (CS)				
Number of Coworking spaces	42	42	20	7
Average size of CS (sf.)	61,341	40,795	62,163	11,649
Average % space leased to coworking	23.38%	39.10%	19.28%	32.10%
Average lease begin year	2016.3	2015.2	2016.8	2015
Average Price: Hot-desk ($/mon)	482.40	414.03	383.17	327.5
Average Price: Private office ($/mon)	978.33	996.32	896.27	802.5

"*" Note: Class of building is coded as: (A) =3, (B) =2, (C) =1.

Table 2: Coworking locations and the office market (Not Including Regus n =111).

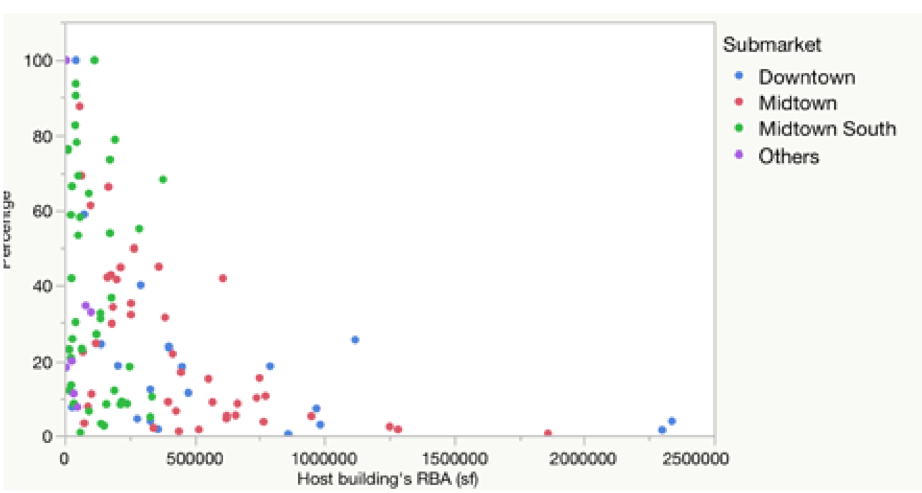

Figure 4: Host building's RBA (sf.) and Percentage of the building occupied by coworking.

buildings' total rentable area. The effect of coworking on valuation needs more in-depth investigation.

WeWork vs. Regus: Table 3 shows that there are now 52 locations listed by WeWork, with a total of about 4.5 million square feet leased in Manhattan. Regus currently operates 42 locations and has leased about 1.3 million square feet. There are 59 locations managed by other coworking space providers, with about 1.1 million square feet of leased space. WeWork's portfolio is double the size of all the other coworking spaces and Regus added together. At some WeWork's locations, the spaces were solely occupied by large corporations, such as IBM at 88 University Place and Amazon at 2 Herald Square, but WeWork's total portfolio in Manhattan is larger than this study estimates. As corporate tenants and long-term lease business are vital to the recent WeWork strategy, its average size for each location is significantly larger than that of the other coworking companies in all markets. About half of its total leased space in Manhattan is located in Midtown, where the supply of office space is the most abundant. Although the growth of corporate tenants helps WeWork to improve financing and lower risks, there is a common concern that the increase in corporations might impact its coworking culture (Wright, 2018).

It is noticeable that Regus offices generally locate in Midtown Class A buildings, while WeWork's inventory is more diverse regarding location and class (Figure 5). WeWork often occupies Class A and B office buildings in Midtown and Class B and C office buildings in Midtown South. The companies' differences in clienteles could explain the variation. While Regus sets its main market in Midtown, WeWork occupies Midtown South where the TAMI industries flourish, and adopts a different type of design that appears to be more appealing to start-up workers. Figure 6 shows that WeWork's spaces with longer operational history located in Midtown South, while Regus started 12 years earlier than WeWork in Midtown. This suggests that before 2014, the two companies located in two different markets and leased different classes of buildings. After 2015, there is a significant

Description	Location	WeWork (n=52)	Regus (n=43)	Others (59)
Number	Midtown	24	29	18
	Midtown South	18	6	24
	Downtown	9	8	11
	Others	1	0	6
Average size (sf.)	Midtown	90,883	31,551	21,951
	Midtown South	75,599	32,908	14,692
	Downtown	102,584	22,082	29,092
	Others	33,344	0	8,033
Total square footage (sf.)	Midtown	2,181,203	915,003	395,119
	Midtown South	1,360,776	197,450	352,619
	Downtown	923,257	176,660	320,012
	Others	33,344	0	48,203
	Total	4,498,580	1,289,113	1,115,953

Table 3: Coworking brands & location (Include Regus n=154).

Figure 5: Building class in different submarkets, by different coworking companies.

change in WeWork's portfolio, and the company started to sign large leases in Midtown and Downtown. With a focus to service large block tenants as part of its growth strategy, WeWork's recent movements are blurring the boundary between coworking space and traditional shared-office.

DISCUSSION

The concern of increasing supply. A general concern for coworking in Manhattan is the lack of new tenants as much of the new demand has been absorbed by existing tenants in the city. The overall lack of demand is reflected by the sales market. According to Colliers International, $30 billion worth of investment-grade commercial real estate was sold in Manhattan, which is only about 50 percent of the sales volume during the market peak of 2015 (Hall, 2019). The overall vacancy rate has remained close to 9 percent over the past five years, and new supply may stress the vacancy level. With an unprecedented amount of office space delivered by new projects such as Hudson Yards and the World Trade Center, office rents may be threatened (CoStar, 2019). An increase of vacant space is anticipated. Although WeWork has started its leasing competition in 2018 by offering hefty broker commissions (Stribling, 2018), the company might face increasing pressure on leasing as much of its portfolio is located in Midtown and Downtown.

Coworking's size and culture. The difference between shared office and coworking space is the difference between monetizing merely the use of space and the access to an appealing community with coworking culture. One dilemma WeWork and other coworking companies will face continually is how to maintain the culture while expanding and staying accessible to different kinds of clientele. As WeWork keeps expanding and absorbing large spaces, how will these large coworking spaces which occupy over 200,000 square feet deal with their community culture? Previous studies have suggested that cultured coworking space is different largely because of their variety of sizes. Taffet (2014) found that coworking space comes in many sizes, and the scale appears to play a role in the ethos of their respective environments. The small scale coworking spaces that Taffet (2014) investigated exhibit a sense of activism in their operation, while the large operators showed a specialized form of property management and business networking. There is an urgent need to study the effect of coworking spaces' sizes on its members' social behavior and community culture.

CONCLUSION

A detailed analysis of Manhattan coworking spaces has several implications for interpreting the trends of the supply market. First, the market share of coworking spaces in commercial real estate might be easily overestimated because of the ambiguity in the definition. The increase in total spaces leased by coworking companies might serve as a "selective disclosure" strategy (Marquis, Toffel, & Zhou, 2016), which reveals partially benign growth but obscures the less impressive overall performance. Second, the result of this study suggests that coworking spaces vary in sizes, and are located in different classes of buildings in different markets. Tracking the differentiation of current coworking spaces reveals that the previous understanding of coworking as "freelancers working together" is threatened by the market's shift to long-term office subleasing, which

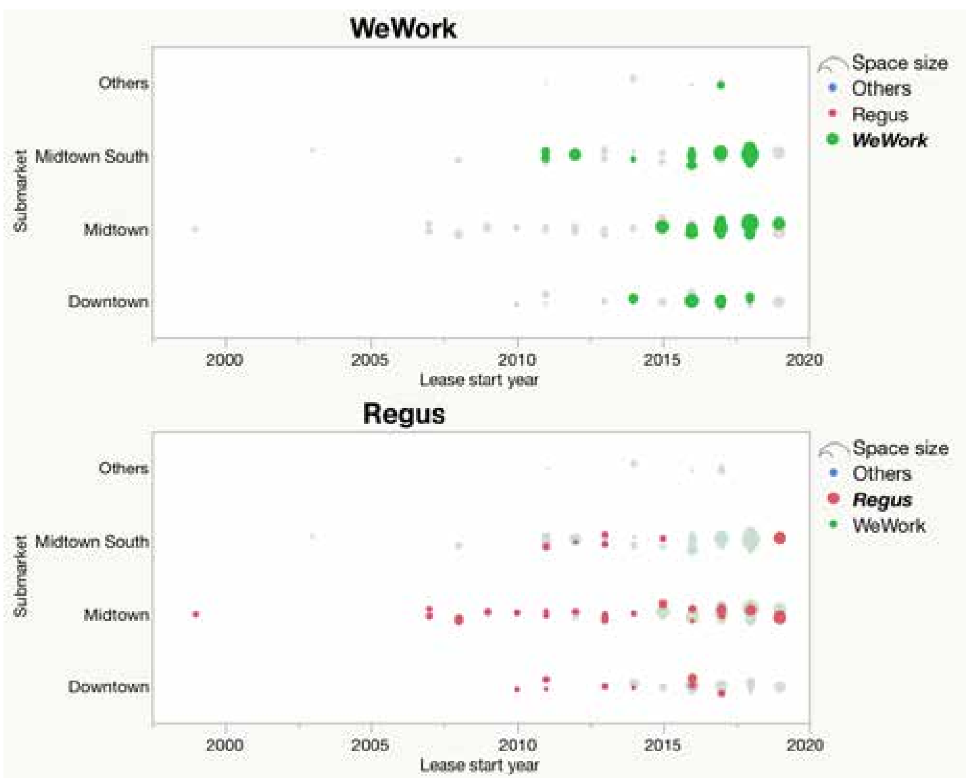

Figure 6: Lease start year in different submarkets, by different coworking companies.

allows lower risks. With an unprecedented amount of new constructed office space gradually delivered to Manhattan, the coworking companies might face more intense competition in the coming years. It is time to reevaluate the demand side of coworking as it is driven by the needs and wants of its target audiences.

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Tailwinds On The U.S. Gulf Coast:

How The Boom In U.S. Energy Production Is Creating Opportunities For Real Estate Investment

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EXECUTIVE SUMMARY

The Federal Government's commitment to deepen the Mississippi River channel and its decision to allow the exportation of crude have created many opportunities in the U.S. Gulf Coast region for private investment and development. Yet the country's resurgence in energy production is temporarily impeded by a lack of sufficient infrastructure necessary to match supply with demand. As the glut of U.S. crude and demand for infrastructure increases, the need for industrial facilities on the Gulf Coast continues to grow. These facilities are essential to economic development along the nation's southern energy corridor. The real estate industry's investment in this region emphasizes the interdependence of the public and private sectors to create value.

OPPORTUNITIES ON THE COAST

Investment interest in Tier II and III markets, secondary markets defined by CBRE's Tier methodology, is increasing. Most markets are set to exceed levels of employment and gross metro product not seen since the last cyclical peak (ULI & PWC, 2018). This has increased demand for real estate, but with fewer noninstitutional investors since the last recession and less access to capital, these markets have not seen oversupply. While industrial growth in the U.S. has made tremendous gains over the past five years with 1.5 billion square feet constructed for warehousing and manufacturing space, supply has started to come online slower than anticipated in Tier I markets (ULI & PWC, 2018). With industrial cap rates reaching all-time lows investors are looking elsewhere for higher yields. This is timely for the U.S. Gulf Coast. With the commitment to deepen the Mississippi River channel in late 2019 and the removal of restrictions on oil exportation, opportunities have been created for private investment and development. Not only is demand growing for pipelines, transport terminals, and other transportation infrastructure, but also for industrial warehousing and manufacturing space.

North American oil production has increased by 24 percent from 2016 levels, and reached 15 million barrels a day in 2019. This is big business for North American refineries located on the U.S. Gulf Coast as they utilize cheap crude for conversion into gasoline, diesel, polyethylene, polypropylene, and other energy-intensive chemicals and plastics (Elliott & Olsen, 2018). While investor portfolios are expanding beyond industrial big-box distribution centers for logistics, they are meeting demand on the Coast for manufacturing facilities and warehouses to serve petrochemical manufacturers in the U.S. and Mexico (Mongelluzzo, 2015). The timing is also important. Wage increases in China continue to strengthen the competitiveness of Central and South American manufacturing, destinations for refined and unrefined U.S. energy products. Additionally, intense oil and gas production in North America, especially in the Permian Basin, has created pipeline bottlenecks providing opportunities for industrial development to focus on terminals for exporting crude and serving energy producers (Elliot, 2018).

The increase in pipeline infrastructure has made crude export difficult and has caused oil to become landlocked, resulting in lower prices (Elliott & Olsen, 2018). Several major pipeline projects are underway to increase capacity on the U.S. Gulf Coast. Though tariffs on steel may cause delays in pipeline construction, a larger problem impeding the export of these products is the lack of sufficient port infrastructure necessary for transportation (Elliot, 2018). The amount of oil extracted per day in the Permian Basin alone is 3.3 million barrels, more than the daily average produced in the United Arab Emirates (Dow Jones Industrial News, 2018).

Even if pipeline infrastructure improved overnight to meet this capacity, only one existing U.S. shipping terminal, the Louisiana Offshore Oil Port (LOOP), located south of New Orleans, can accommodate giant tankers called Very Large Crude Carriers, or VLCCs (Elliot, 2018). Today,

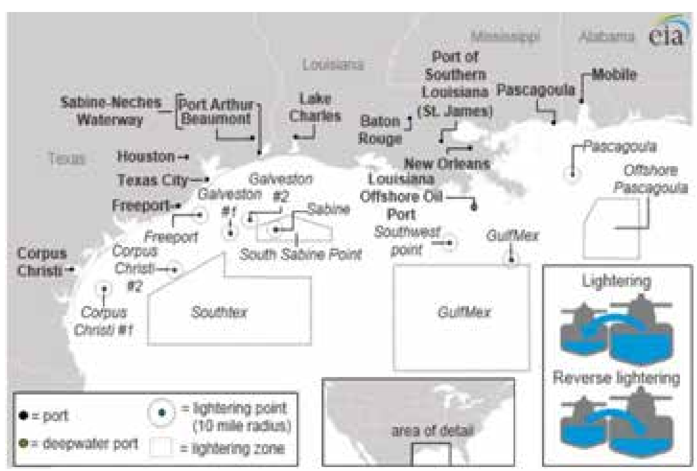

Figure 1. U.S. Gulf Coast petroleum ports and lightering areas. Source: U.S. Energy and Information Administration.

LOOP primarily imports crude and transports it to refineries across Louisiana and throughout the Midwest and Canada. The facility's undersea pipelines, storage capacity, and deep-water single-point mooring facilities provide unique advantages compared to other U.S. Gulf Coast port facilities. Still, LOOP is set to shift from imports to become the top U.S. exporter as the crude boom continues. As the shift to exporting intensifies, the industry will have to find ways to develop export infrastructure.

INFRASTRUCTURE NEEDS

Most U.S. ports and waterways are already congested and need infrastructure investment. Many ports, including these on the U.S. Gulf Coast, need deeper shipping channels and wider turning basins, services developed by the U.S. Army Corps of Engineers, as well as new cranes and container terminals. In August 2018, a $238 million plan to dredge the Mississippi River, ensuring a depth of 50 feet from its mouth to Baton Rouge, was approved by the U.S. Army Corps of Engineers and is expected to commence (Schleifstein, 2018). Congress authorized depths of 55 feet between the River's mouth and Baton Rouge in 1985. The channel has only been deepened along this 256-mile distance to 45 feet with the last dredge in 1994.

By providing an additional five feet of depth along the channel between the River's mouth and Baton Rouge, Federal and state government investment will allow New Panamax ships to reach four of the top performing 15 U.S. ports that handle, not only 60 percent of the nation's grain, but also connect to 14,500 miles of inland navigable waterways (Times Picayune, 2018). This type of investment is essential to U.S. logistics, including the transportation of energy. The growing business of logistics alone represents 10 percent to 15 percent of OECD economies as it continually places pressure on ports and surrounding industrial space to adapt

Figure 2. Barge in inland Louisiana waterway unloading crude into storage. Source: U.S. Department of Energy.

to modern needs. Without investment in these spaces, they will suffer economically (Pun, Nurse, 2010 & Rushton, Oxley, Croucher, 2000). This is especially true as the U.S. energy production resurgence is linked to the decline of net energy imports which reduces the U.S. trade deficit.

In 2016, Congressional leaders agreed to end a 40-year-old restriction on oil exports in order to increase market efficiency, stimulate the U.S. economy and boost national security (Harder & Cook, 2016). While the development of sufficient crude export infrastructure will be lengthy, Gulf Coast refineries, a third of the total U.S. number, will continue to refine the crude glut at a discount before exporting it. Still, after decades of investment, most facilities are engineered toward refining heavy Canadian and Venezuelan crudes. As these facilities make petroleum products such as gasoline, diesel, heating oil, jet fuel, petrochemical feedstocks, waxes, lubricating oils, and asphalt, it will be economical to import and transfer crude from tankers until supply becomes restricted. It is global demand from foreign refineries that will continue to drive U.S. energy exports, projected to reach four million barrels by 2020 from virtually nothing in 2015 (S&P Platts, 2018).

DEMAND FOR U.S. CRUDE

Today, U.S. crude is primarily consumed by China. Amid the contentious trade climate between both nations and a list of retaliatory tariffs on U.S. imports announced on August 8, 2018, import duties were recently announced only on oil products such as asphalt shale, oil shale, tar sand, liquified petroleum gas (LPG) and coal, but not on U.S. crude

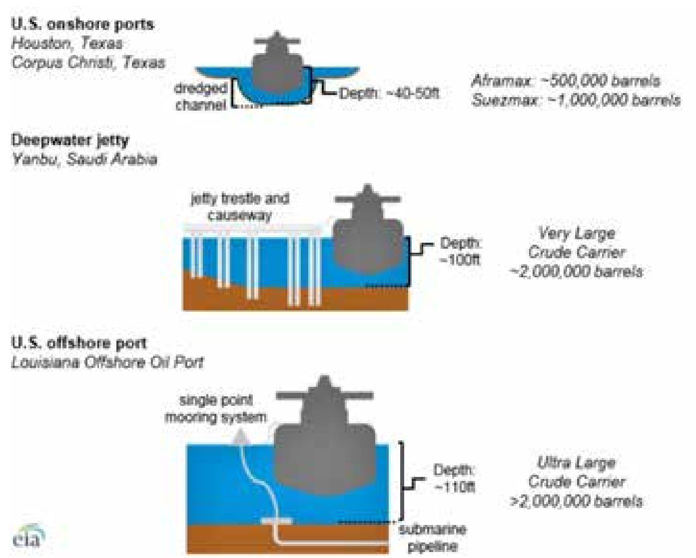

Figure 3. Port depth and crude oil export facility examples. Source: U.S. Energy Information Administration.

Figure 4. Global Ship Tracking from www.marinetraffic.com. Cargo vessels shown in green. Tankers shown in red.

(S&P Platts, 2018). Still, uncertainty has caused Chinese refineries to withdraw from purchasing U.S. crude. Despite this, Asia is still projected to increase its consumption of U.S. sweet and sour crude grades as countries such as India, Taiwan and Indonesia shift from energy producers such as Nigeria and Iran.

For instance, India has recently modernized its refineries whereby demand will increase for U.S. WTI sweet, primarily shipped from the U.S. Gulf Coast. Taiwan's Formoso Petrochemical Corporation purchased one million barrels of Mars, a medium sour grade crude extracted from the Gulf of Mexico, in October, 2018, while Malaysia's Petronas has been purchasing U.S. Mars since August, 2018 (S&P Platts, 2018). This oil is shipped from terminals in southeast Louisiana where the Mars Crude Oil Pipeline delivers oil from the Mississippi Canyon, an undersea canyon in the Mississippi Submarine Valley.

DEVELOPMENT ON THE COAST

Private enterprise is investing in terminals and port facilities to meet global demand, whereas the U.S. public sector has lagged. Several large announcements have originated from the U.S. Gulf Coast this year. Trafigura, a Swiss commodity trading company, through its subsidiary Texas Gulf Terminals, is planning on the construction of a mega-terminal located 12.7 miles off the coast of Corpus Christi to accommodate VLCCs for crude export. Sentinel Midstream also plans to accommodate VLCCs with the 85,000 barrel per day terminal Texas GulfLink. Enbridge Inc., Kinder Morgan and Oiltanking are collaborating and have secured sites to accommodate VLCCs as well as Enterprise Product Partners LP.

Figure 5. U.S. Gulf Coast map shows refineries indicated by orange dots, new terminals indicated by black squares, LOOP indicated by blue square, and pipeline network including Bayou Bridge Pipeline indicated by green line and proposed extension indicated by black line.

Tallgrass Energy LP, together with Drexel Hamilton Infrastructure Partners, has announced a $2.5 billion 700-mile pipeline and crude export terminal at the mouth of the Mississippi River in Plaquemines Parish, Louisiana. The facility is meant to hold 20 million barrels of crude in storage and transport 800,000 barrels of crude from Cushing, Oklahoma. Additionally, Marathon Petroleum is adding a terminal for refined product export in St. John the Baptist Parish on the Mississippi River, adding storage space for 10 million barrels and docks capable of loading 240,000 barrels a day. Phillips 66 Partners LP's 480,000 barrel per day Bayou Bridge Pipeline, in a JV with Energy Transfer LP, will soon operate from Nederland, Texas, to St. James Parish. Phillips 66 Partners LP, in a JV with PBF Logistics LP and Harvest Midstream Company, is also set to extend this pipeline's reach in 2020 to refineries little more than 10 miles away from New Orleans, but on the Mississippi River in both Plaquemines and St. Bernard Parishes.

In addition to these announcements, the LNG industry is also announcing numerous refinery developments and export terminals on the Texas and Louisiana coasts. Meanwhile, as LOOP becomes the nation's top exporting facility, secondary and tertiary industrial infrastructure along the coast will be impacted. Most terminals have water access since transport by water and pipelines are the most cost effective. Trucks and tankers can be used for refined products, but transporting crude by rail is cost prohibitive and poses environmental risks. Because of this, prices are soaring on usable land due to speculation. Still, as capital flows into these areas, opportunities are becoming available to service the value and supply chains of the oil and gas industries. These places will need value added manufacturing sites such as pipe manufacturing facilities or break bulk terminals used to unload and warehouse individually handled cargo. Avondale Marine, a JV between Hilco Redevelopment Partners and T. Parker Host formed in 2018, is repurposing a historic shipyard to service this activity. It is an example of how global trade and a growing U.S. energy market stands to reinvigorate the area.

Figure 6. Louisiana refinery in St. Rose, Louisiana. Source: Flickr.

AVONDALE SHIPYARD REDEVELOPMENT

Avondale Shipyard was once the largest private employer in Louisiana providing over 26,000 jobs to the state's residents at its peak (The West Bank Beacon, 2018). Over the eight decades of its operation beginning in 1938, the shipyard constructed and repaired various types of military and commercial vessels (Ragen, 2001). The shipyard constructed fishing boats, drilling barges, amphibious ships, patrol boats, destroyers, and icebreakers (Times Picayune, 2018). With 20 employees, the shipyard started as a repair and barge construction facility for vessels on the Mississippi River. By 1941, employment at the shipyard was over 200 and peaked in the 1980s (2018). The shipyard closed in 2014 terminating 5000 jobs (Business Report, 2018).

During the 1940s, the shipyard began constructing vessels for the military through contracts awarded by the United States Maritime Commission, and later advanced to building larger military vessels such as destroyers and destroyer escorts throughout World War II and the Korean and Vietnam

Figure 7. Barge unloads break bulk from nearby manufacturing facility. Source: U.S. Department of Energy.

Figure 8. Crude oil storage in Nederland, Texas. Source: U.S. Department of Energy.

Wars (Broach, 2018). Louisiana's oil industry expanded after World War II, and the shipyard started constructing oil rigs as well as drilling barges. The Ogden Corporation purchased the shipyard from the original owner, Avondale Marine Ways, in 1959 (Wall Street Journal, 1985). The shipyard became a publicly traded company in 1988 called Avondale Industries, Inc. (Broach, 2018). Litton Industries merged with Avondale Industries in 1999 and the shipyard was subsequently acquired by Northrop Grumman with the purchase of Litton Industries in 2000 (Defense Daily, 1999). Northrop Grumman's shipbuilding business was spun off as Huntington Ingalls Industries in 2011 (Business Wire 1999).

As the U.S. Navy throttled down its shipbuilding efforts in the 1990s, Avondale's shipbuilding business declined, leading to its closure in 2014 (Broach, 2018). The closure of the shipyard was a process that lasted from 2010 for five years as Huntington Ingalls Industries moved its shipbuilding operations to Pascagoula, Mississippi (Ocean News Technology, 2010). At the announcement of the closure, residential real estate throughout metro New Orleans was on the rise by double digits year over year, except for the West Bank of the Mississippi River, the location of the Avondale shipyard, where prices dropped to 41.8 percent (Muller, 2010).

Although Avondale Marine does not intend to bring shipbuilding back to the narrow 270-acre site, the venture will focus on manufacturing, warehousing and distribution as it services nearby petrochemical facilities and provides the possibility for terminal colocations. Recent industrial acquisitions by U.S. Foods and Cornerstone Chemical will aid in its development. With access to rail, the site is also connected to other Hilco Redevelopment industrial sites in Chicago and Baltimore destined to be logistics hubs (Nitkin, 2018). Other than the granting of a railroad right-of-way permit by the State of Louisiana, and a payment in lieu of taxation (PILOT) by Jefferson Parish, Hilco Redevelopment received no additional government incentives for the company's investment.

Figure 9. Elevated starboard quarter view of the commercial fleet oiler, USS Joshua Humphreys.

TAILWINDS

Despite the site's narrowness, opportunities exist to facilitate and expand the increasing container traffic on the Mississippi River. For example, The Port of New Orleans recently moved "more containers in 2018 than at any time in its history: 591,253 twenty-foot equivalent units (TEUs), up 12.3 percent compared to one year ago" and, in the same year, hosted the Pusan C. 9,500-TEU vessel, the largest container ship to ever call on the Port (American Shipper, 2019). The recent increase in volume can be attributed to port leadership putting emphasis on growing capacity. The takeover of the New Orleans Public Belt from the City of New Orleans by the State of Louisiana was also instrumental. The New Orleans Public Belt is served by six Class 1 railroads - BNSF, Canadian National, CSX, Kansas City Southern, Norfolk Southern, and Union Pacific - together comprising a network of over 132,000 miles of track.

Figure 10. Container ship at the Port of New Orleans.

Figure 11. Containers loaded onto rail at the Port of New Orleans.

Space at the port, however, is limited. The facility plans to double its capacity and invest heavily in 100-guage cranes, road congestion and constrained land supply problems remain. The port's plans to redevelop brownfield sites along each side of the Inner Harbor Navigation Canal, also called the Industrial Canal, through its Port Inner Harbor Economic Revitalization Plan (PIER), will take time (Waterways Journal, 2018). This is an opportunity for Avondale Marine to purchase land and expand its services to meet the needs of the area.

Since the 2018 Avondale Shipyard purchase, the area has seen an uptick in activity. Fuji Vegetable Oil, a specialty oils producer based in Osaka, Japan, recently broke ground at the International-Matex Tank Terminals Avondale facility on a food processing, storage and distribution complex in next to the Avondale Shipyard site. The lower Mississippi River region is a hub for tropical commodities, and the Fuji plant will utilize the area's geographic advantages as it refines raw palm oil. Additionally, the area has also seen announcements for several planned community and workforce housing in anticipation of demand. These initiatives serve as a testament to the possibilities of economic development.

Louisiana's potential must be weighed against several factors. First, Louisiana has the highest combined state and local sales tax in the nation. Second, local government entities were recently given autonomy over how the state's 80-year-old Industrial Tax Exemption Program (ITEP) is administered, potentially complicating the expansion of the energy industry in Louisiana. Third, the state's D+ infrastructure rating in the latest study by the American Society of Civil Engineers illustrates its fiscal condition (ASCE, 2017). Though these factors impede the state's ability to take full advantage of Gulf Coast tailwinds, Louisiana is positioned better today than recently.

The state's recent temporary sales tax increase has provided its coffers with a $300 million surplus and improved credit rating. Discussions on how to allocate the surplus are underway, and the state's governor is proposing a portion of it be spent on infrastructure. This temporary tax will most likely become permanent under the state's next administration, providing additional opportunity for the state to update its energy corridor infrastructure. Additionally, because Louisiana's bonding capacity is constitutionally tied to its revenue projections, the $300 million surplus of fiscal year 2017-2018, subsequent to a $1.5 billion shortfall, means that the lawmakers are now unrestrained in issuing bonds for large industrial projects conducive to economic development.

Furthermore, as the Fixing America's Surfact Transportation Act (FAST) is set to expire in 2020, the Trump administration has signaled that it will make infrastructure spending a priority. The likelihood that the U.S. Gulf Coast will see Federal investment is high given the compositions of both the House and Senate Committees on Transportation and Infrastructure. These potential improvements in the near future will certainly be attractive to investors as actions are taken to capitalize on emerging energy trends (Vanelslander, Chomat, Roumboutsos & Bonnet, 2014). The tailwinds on the U.S. Gulf Coast are providing an abundance of opportunities for investors and governments alike. The opportunities for economic development began with changes in government energy export policy and commitment to deepen the Mississippi River channel. The leverage of the public sector and its importance to the real estate industry is unequivocal. Equally essential is the private sector's influence on economic development.

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The U.S. Student Housing Market: Overlooked Opportunities

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INTRODUCTION

Student housing has emerged in recent years as one of the most in-demand asset classes in commercial real estate. Investors, both domestic and international, have been attracted to U.S. student housing projects for many reasons, including their steady yields and reliable returns during all market cycles (The Economist, 2018). As a result, investment in and development of student housing has increased dramatically over the past few years (Brass, 2018). Even with this increased focus on the sector, opportunities still remain in the student housing industry, particularly for investors and developers with differentiated projects. This paper will examine the current state of the U.S. student housing market and suggest four overlooked opportunities in this market that could provide investors and developers with an edge in the increasingly competitive and crowded environment.

U.S. STUDENT HOUSING MARKET

Student housing has emerged as a new and maturing commercial real estate asset class (Hale, 2018). Student housing complexes are rental apartment projects that cater exclusively to students and are located in close proximity to institutions of higher education. Once consolidated into the multifamily residential asset class, student housing has become an attractive investment class in its own right for a number of reasons. For example, student housing provides consistent income, enjoys generally higher yields than traditional multifamily rentals, and is less sensitive to market cycles as university enrollments remain stable and indeed often swell during economic downturns (The Economist, 2018). Indeed, as employment opportunities diminish during a recession, many individuals elect to return to school to weather the downturn and build their skills. As a result, while other sectors of the commercial real estate market may suffer from diminished demand during a recession, student housing projects generally do not experience such reduced demand and may even see increased demand.

Given these fundamentals, investment in U.S. student housing projects has increased considerably over the past five years. Investors poured a record $9.8 billion into these projects in 2016, which represented a threefold increase from 2014 (Brass, 2018). Total investment in U.S. student housing projects did fall slightly to approximately $8 billion in 2017 (Brass, 2018). However, 2018 is projected to be another record-setting year with total investment in these projects expected to exceed $10 billion (Anderson, The Investment Outlook for Student Housing Remains Stable, 2018). Given this appetite from investors, developers have been increasing their production of student housing with 46,000 new beds available for the Fall 2017 semester and 42,000 beds expected to be available for the Fall 2018 semester (Brass, 2018).

The strength of the U.S. student housing market has caught the attention of international investors. Foreign investment in U.S. student housing projects has increased over the last few years, amounting to approximately 36 percent of total investment in the sector in 2017 and 21 percent in 2016 (Fung, 2018). Moreover, in 2016, sovereign wealth funds allocated over 15 percent of their total investment dollars to student housing, an eleven-percentage point increase from their 2011 allocation (The Economist, 2018). At this point in the cycle, both foreign and domestic investors perceive student housing to provide a superior risk-return profile while additionally providing further portfolio diversification (Fung, 2018).

OVERLOOKED OPPORTUNITIES

A number of opportunities in the student housing sector are currently overlooked by many student housing investors and developers, including a growing demand for (1) student housing for international students, (2 student housing developments containing additional uses, (3) more robust student housing options for community colleges, and (4) more affordable student housing options. While some of these opportunities are more readily achievable than are others, investors and developers would be wise to consider these opportunities as they analyze future transactions.

A. Increased Enrollment of International Students at American Universities

While the number of college-aged Americans is projected to decline or at the very least stagnate over the coming years, international students are attending American colleges and universities in significant and increasing numbers. During the 2017/2018 academic year, almost 1,100,000 international students were enrolled at U.S. colleges and universities, a one and one-half percent increase from the prior year (International Student Enrollment, 2019). International students now comprise over five percent of U.S. college enrollment (International Student Enrollment, 2019). The number of forien students studying internationally has increased by 40 percent over the past five years alone (The Economist, 2018). China, India, and South Korea are the most represented countries of origin for international students studying in the U.S. (Anderson, International Students Are Major Source of Demand for Student Housing, 2015). International students enrolled at U.S. colleges and universities are split relatively evenly between graduate and undergraduate programs (International Student Enrollment, 2019).

The total number of internationally mobile students is expected to reach eight million by 2025, a significant increase from the 4.5 million such students in 2012 and the two million such students in 2000 (Anderson, International Students Are Major Source of Demand for Student Housing, 2015). The growth of the global middle class, particularly in developing countries such as China and India, has increased the number of students seeking quality higher education. While American universities compete with universities in other parts of the world, particularly Western Europe, the United States remains the top destination for international students (Anderson, International Students Are Major Source of Demand for Student Housing, 2015).

There are several strategies that student housing operators can employ to attract and retain these growing numbers. First, at a minimum, student housing operators must familiarize themselves with the various nationalities that predominate the local college or university. With this knowledge, they can then design a targeted outreach campaign for these students. In many cases, successfully connecting with international students will require substantial improvements to a student housing operator's marketing, leasing, communications, and customer service platforms and strategies (National Real Estate Investor - Atlanta, 2016).

Second, housing operators should work to forge good relationships with their local institution's international student affairs office, graduate programs popular with international students, and firms that assist international students in finding suitable housing prior to their arrival on campus (National Real Estate Investor - Atlanta, 2016). These partnerships should prove beneficial for both parties: the student housing operator is provided with a continual pipeline of prospective residents while the referrer is able to assist students satisfy one of their biggest needs and perhaps biggest stress in making the transition to an international program. Of course, this partnership will only continue to the extent that the student housing operator is able to provide residents with safe, clean, and fairly priced accommodations.

Such a partnership need not necessarily be formalized between the housing operator and the university. In fact, most such partnerships will likely be informal and may consist of the student housing complex's inclusion in information provided by the institution to its students. However, there is an opportunity for student housing operators to further drive demand through more formal partnerships with institutions. It is not uncommon for universities to have preferred providers for certain vendors such as athletic apparel or soft drinks. Depending on the size of a student housing complex, a school's need for student housing, and the economics of a transaction, a student housing operator may explore a formal partnership with an institution. For example, a developer partnered with Temple University in Philadelphia, Pennsylvania, to develop a 100-unit residential facility for international students, faculty, and researchers as well as students studying international affairs (Temple University, 2010).[1] Referred to as the "Beech International Village", the website for this community offers translations in Chinese, Dutch, and French.

Third, a student housing operator can undertake some simple steps to make its community more accommodating and attractive to international students. For example, creating a platform that allows students to lease units from abroad can be beneficial (National Real Estate Investor - Atlanta, 2016). In addition, to the extent that international students prefer to room with a similarly situated individual, operators should provide resources to allow international students to coordinate this process (Anderson, International Students Are Major Source of Demand for Student Housing, 2015). Moreover, to ease international students' transition to America, operators should ideally have someone on staff who can communicate with these students in their native languages and, to the extent that a community serves food, its menu should include some options appealing to them (Anderson, International Students Are Major Source of Demand for Student Housing, 2015). Increasing its staff's multicultural awareness through training is also advisable for a student housing community seeking to attract and

1 Due to a campus-wide student housing shortage, this community was recently opened to all students (Paige Gross, 2017).

retain international students (National Real Estate Investor - Atlanta, 2016). A student housing complex that successfully attracts and retains international students is likely to attract additional students to the community (Anderson, International Students Are Major Source of Demand for Student Housing, 2015).

It must be cautioned that attracting international students will not be a successful strategy for all student housing complexes as they are not uniformly distributed among American colleges and universities. In addition to Ivy League universities, international students are predominantly attracted to tier-one research universities and world-famous schools, particularly those with strong technology programs. Examples of universities with a large number of enrolled international students include Florida Institute of Technology (33 percent), Illinois Institute of Technology (30 percent), Boston University (19 percent), and New York University (15 percent) (Anderson, International Students Are Major Source of Demand for Student Housing, 2015).

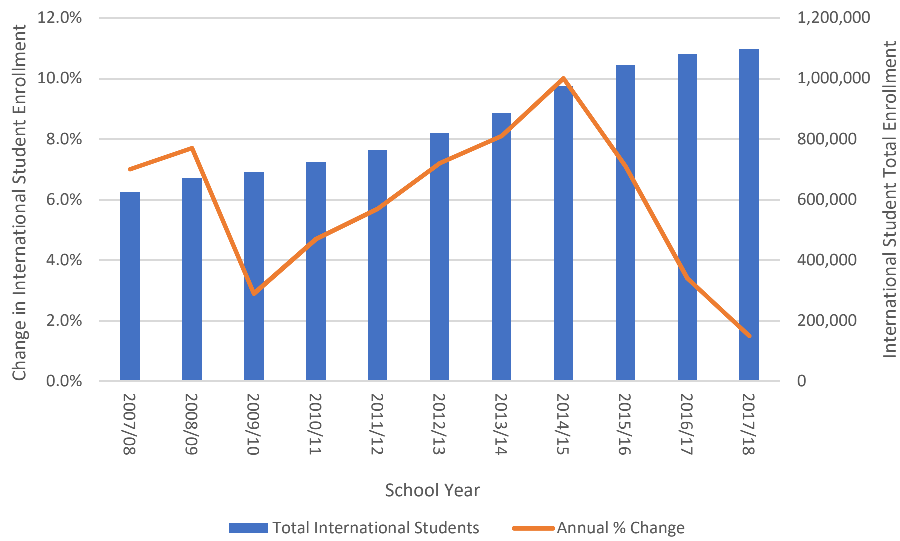

Figure 1: Total number and annual percentage change of international students attending U.S. colleges and universities (source: International Student Enrollment. (2019, February 8). Retrieved from Institute of International Education, Inc.: https://www.iie.org/Research-and-Insights/OpenDoors/Data/International-Students/Enrollment).

Global and domestic factors can affect international student enrollment at U.S. colleges and universities. For example, as a result of the sharp decline in oil prices, the government of Saudi Arabia significantly downsized their study-abroad scholarship program, which affects the fourth largest group of international students attending U.S. colleges and universities (National Real Estate Investor - Atlanta, 2016). Domestic factors can also suddenly shift and impact international student enrollment such as the imposition of a travel ban on certain countries as well as the tightening of rules on visas for international students studying in the U.S. (The Economist, 2018). Finally, while the number of international students studying at U.S. colleges and universities has increased substantially over the last decade, the pace of this growth has slowed markedly over the past two years (International Student Enrollment, 2019).

B. Student Housing as Part of a Mixed-Use Project

Coupling student housing with complementary uses can create additional value by providing built-in demand from the student residents, satisfying desires for nearby services and amenities, and allowing developers to incorporate higher risk but higher return property types that can increase their yields (Booty, 2018). Indeed, student housing complexes with additional uses often have higher rents and trade for higher values than do standalone student housing complexes as they more effectively cater to students' preferences for a combined live, work, and play environment and often are situated in locations where the other uses can thrive (Friedman, 2015).

Two of the most popular uses to combine with student housing are retail and hospitality (Rosario, 2018). Retail is a natural complement to a student housing project with tenants ranging from restaurants and coffee shops to

Figure 2. Domus in Philadelphia, PA, abutting the campuses of the University of Pennsylvania and Drexel University, features numerous retail tenants on the ground floor, including a Starbucks, Wells Fargo, and other stores (source: Google Maps).

pharmacies and convenience stores (Rosario, 2018).[2] Accordingly, hotels allow visiting parents, friends, and alumni space to stay in proximity to the students and campus (Rosario, 2018). In addition, student housing projects are increasingly incorporating an office component to provide space for students to interact with the business community in often creative office spaces (Booty, 2018). This space can be rented out to student groups or even potentially to a nearby university (Booty, 2018).

While incorporating other uses in a student housing project is an increasing trend, it still only amounts to approximately 20 to 25 percent of the projects being developed in 2015 (Friedman, 2015). Developers should not automatically create additional uses in a student housing project and must first ensure adequate demand for such uses exists. For instance, additional uses should be avoided if the space will be difficult to lease to reputable tenants or will result in increased construction costs that do not outweigh the additional revenue (Nyren, 2016). Another concern is the increased complexity that a mixed-use project can entail with regard to obtaining financing though this can generally be overcome (Friedman, 2015).

C. Demand at Community Colleges

Two-year community colleges are often overlooked by student housing developers despite the fact that, for instance, "42 percent of all undergraduate students and 25 percent of all full-time undergraduate students were enrolled in community college" in the fall of 2014 (Ma & Baum, 2016). While four-year colleges remain the focus of most private student housing development, two-year colleges have experienced increased development of private student housing in recent years (Pena, 2017). Compared to the tens of thousands of student housing beds delivered annually at four-year colleges, however, the total number of student housing beds delivered at two-year colleges in 2017, the best year since 2014, barely exceeded 1,000. Despite these small numbers, some in the industry believe that student housing developers will increasingly seek sites near community colleges (Brass, 2018).

Additional caution must be exercised when considering a project near a community college due to certain unfavorable demographic trends and funding concerns. Enrollment at two-year colleges has been declining since 2010 as students put off community college while the economy is strong and unemployment is low (Smith, 2018). If the economy weakens, enrollment is expected to increase, though shifting demographics portend future challenges in the middle of the next decade (Smith, 2018). Further, two-year colleges have seen their funding allotments decrease significantly over the past decade with eight states experiencing declines in excess of 30 percent (Smith, 2018). While many of these trends are affecting four-year colleges as well, the impact is more pronounced on two-year colleges given their smaller size and budgets. Therefore, student housing developers should seek high-performing two-year colleges that are able to attract students during all market cycles and that have secure funding sources.

D. Demand for More Affordable Options

As the costs of higher education and housing continue to escalate, there is a growing need for more affordable student housing options. Indeed, after tuition costs, housing is a student's biggest cost (Pimentel, 2019). According to a study published last year, 36 percent of students attending

Figure 3: The Radian in Philadelphia, PA, neighboring the campus of the University of Pennsylvania, sits on a retail podium with restaurants, a bank, and a CVS Pharmacy (source: Google Maps).

Figure 4: The Edge Student Village in Philadelphia, PA, adjacent to Temple University, includes a retail component with a movie theater, fast-casual restaurants, and other stores along Broad Street, a busy commercial corridor, with a residential tower in the rear (source: Google Maps).

2 By one estimate, student spending exceeds $15,000 per year for the average college student (Friedman, 2015).

four-year universities qualified as "housing insecure", which is defined as experiencing a "set of challenges such as the inability to pay rent or utilities or the need to move frequently" (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018).[3] The situation is even more dire for students of certain ethnic groups, with housing insecurity affecting 43 percent of Black and 58 percent of Native American students attending four-year universities. These statistics underscore the significant market need for affordable student housing options, particularly as growing numbers of diverse students are attending college.

As is the case with affordable housing generally, significant barriers currently impede the private sector's ability to meet this need, including rising land and construction costs as well as restrictive governmental regulations (Pimentel, 2019). While large units and lavish amenities were hallmarks of many student housing developments completed over the past few years, future developments that seek to offer affordable options should instead focus on smaller units with more limited amenities in order to reduce costs (Pimentel, 2019). Moreover, to control costs so that they can provide student housing at more affordable prices, developers may be able to ground lease land from universities at a discounted rate as long as they pledge to provide affordable student housing.

CONCLUSION

With the U.S. student housing market attracting more and more attention, both domestically and internationally, due to its strong fundamentals, developers and investors are constantly searching for innovative ways to differentiate and add value in their projects. This paper has suggested four overlooked opportunities that currently exist in the student housing sector, including (1) providing housing to the large and growing population of international students attending U.S. colleges and universities, (2) incorporating other uses in a student housing project to create a dynamic mixed-use development, (3) developing more student housing for currently underserved community colleges, and (4) focusing on meeting the demand for more affordable student housing options. Each of these opportunities holds the promise of providing student housing developers and investors with an innovative strategy that will differentiate and add value to their developments.

3 Housing insecurity is even more acute for community college (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018).

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Opportunity Zones And New Orleans:
A Chance For Affordable Housing Growth

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A graduate of Louisiana State University, Wilson is in the Baker Program's Class of 2020. He began his career in 2012 in commercial real estate brokerage specializing in industrial and retail properties. In 2015, he transitioned into single tenant retail, managing site selection, acquisition, and development for a fast-growing automotive retail chain across the Southeast and Midwest. After Cornell, Wilson will pursue a career in distressed and opportunistic real estate investments.

INTRODUCTION

In the year and a half since their introduction, Opportunity Zones have quickly become one of the hottest topics in real estate development. This exciting program offers a new chance to revitalize distressed communities around the country by significantly broadening the pool of potential investors and providing them with enticing incentives to pull their money out of the market and into these locales. The success or failure of the program will hinge on the ability of public-private partnerships to bridge an often fraught line between outside investment and local community. In addition to providing an overview of the Opportunity Zone Program, this article examines the history of these partnerships in New Orleans and identifies the areas of the city that may benefit most from a new, aggressive approach to bringing in previously untapped resources to meet the needs of local residents.

OPPORTUNITY ZONES: AN OVERVIEW

Created by the 2017 Tax Cuts and Jobs Act, Opportunity Zones have attracted a tremendous amount of interest since their introduction. Designed to spur investment in distressed communities across the country, the tax incentive program called on the top officials in each state and territory to designate low income census tracts that best presented opportunities to increase investment and economic prospects. By providing benefits in a similar fashion to a 1031 exchange, the program allows investors, upon the sale of an asset, 180 days to re-invest the capital gain proceeds (not including the original basis) into a Qualified Opportunity Fund ("QOF") that in turn must invest these funds into Qualified Opportunity Zones. These zones, numbering over 8,700 census tracts that have been certified by the United States Department of the Treasury, present a unique opportunity that would allow investors to take advantage of the estimated $6 trillion in unrealized capital gains held in the U.S. market and to guide these funds into some of the most economically depressed areas of the country. If investments of QOFs are held for at least five years, the basis on the original gain is increased by 10 percent. If the same investment is held for at least seven years that percentage increases to 15 percent. Investments held longer than ten years will be eligible to be marked up to the fair market value of such investment on the date the investment is sold. Essentially, this amounts to an exclusion of capital gains taxes on any gains earned from an investment in a QOF over ten years when the investment is sold or disposed.

While the rules are not yet finalized, in October 2018 the IRS released a set of proposed regulations guiding investments in QOFs that have begun to allow the overall process to take shape and have provided encouragement to investors. For instance, investors were concerned with the initial stipulation that it was necessary for QOFs to have 90 percent of their assets invested in qualified Opportunity Zone property within 180 days. Given the uncertain nature of timing in the development of either operational businesses or real estate, many investors were wary of being able to meet this requirement, however the proposed IRS regulations apply working-capital safe harbor rules that contemplate allowing a QOF up to 30 months after acquiring a tangible asset in which to improve that asset substantially (IRS–Proposed OZ Guidelines). Although the program's eligible investments include existing businesses and startups, it is uniquely tailored to appeal to those in the real estate industry.

Opportunity Zones are not unique in the sense that the United States, at both the federal and state level, has designed numerous programs over the last several decades intended to boost investment in economically distressed communities. Critics of the program contend that Opportunity Zones are just another tax incentive that will not do much to move the needle of investment in these underserved communities. Other incentives, such as New Market and Low Income Housing Tax Credits (NMTC and LIHTC, respectively) have been in place for years with mixed success. Additionally, many of the communities designated as Opportunity Zones have been neighborhoods in close proximity to areas that have seen considerable investment and are already themselves in the process of transitioning. How, the critics ask, will the residents of these zones be able to remain in place and be able to partake in the upside in the face of significant outside investments that may increase property values and rents to unsustainable levels? The answer is not completely clear. Opportunity Zones are at the intersection of one of the country's foremost cultural, political, and economic challenges: how to bring new investment to distressed areas without entirely displacing or excluding existing residents.

INVESTORS RISING TO THE CHALLENGE

Doubts about the viability of the program and the lack of finalized regulations has not tempered the enthusiasm of the real estate community. According to the National Council of State Housing Agencies (NCSHA), as of February approximately $24 billion has been raised by 105 Qualified Opportunity Funds. Of these funds, ninety percent intend to focus on commercial real estate investments. Encouragingly, approximately half of the funds intend to focus on community revitalization, including affordable housing or workforce housing. While the NCSHA offers a fairly comprehensive view of existing funds, the broadness of the proposed regulations allow for individuals to create QOFs supporting individual projects. As regulations continue to take shape and are finalized and investors become more comfortable with the process, more funds should be created.

The enormous potential of Opportunity Zones lies in the unrestricted cap on the amount of capital that can be invested through a QOF. Even if a small portion of the trillions of dollars' worth of unrealized capital gains flow into these funds, the size of investment will dwarf that of programs with similar goals, such as the LIHTC program, which allocates funds to state housing finance agencies based on population. The process of awarding funds through this program is complex and lengthy, requiring coordination across federal and state levels. The level of sophistication naturally limits the willing participants in the market and is estimated to cost the government approximately $9.0 billion annually. No such limits currently apply to those willing to invest in QOFs. The potential of investors in stocks, bonds, and other asset classes to make long term real estate investments, while deferring or altogether foregoing taxable gains, opens up a broad and diverse pool of capital that has clearly demonstrated a willingness to attack the massive problem of housing affordability.

The challenge facing investors in Opportunity Zones is the learning curve associated with investments in distressed communities that in most instances over the last several decades have consistently seen these types of efforts fail to meet expectations. The real estate development landscape during this time has constantly shifted and expanded. The number of "stakeholders" in the development of any major project (and many minor ones) has multiplied as the world has become a more open and global place. The activist culture that grew out of the Civil Rights and peace movements of the 1960s manifested itself in local advocacy groups and grassroots neighborhood organizations that hold wide ranging beliefs and push specific agendas, leading to a much more fractured and complicated development process. Coupled with the fact that Americans have become increasingly less likely to chase opportunity and jobs outside of their natural birthplace (a characteristic that defined the country for much of its history), neighborhoods have developed distinct identities and senses of place that these groups seek to maintain. As a result, the ultimate success or failure of Opportunity Zone Funds will depend upon their ability to balance the needs and demands of the local community with overall investment goals and targeted returns required by investors. Fortunately, a framework for this type of engagement already exists.

COMMUNITY DEVELOPMENT CORPORATIONS

Over the same time period that saw the emergence of a plethora of local advocacy groups, the U.S. has developed a wide ranging framework of entities whose stated goal is to foster community building and guide funds into such distressed areas. These entities, be they community development corporations (CDCs), community land trusts (CLTs), local economic development corporations, or similarly structured organizations collectively have a mixed track record at successfully bridging the gap. Of these various organizations, the CDC is most suited to the task of serving as an intermediary between the emerging QOFs, the local community, and local government.

A community development corporation is comprehensively defined as "a nonprofit, community based urban development organization that engages in economic development activities such as housing production, commercial property development, business development, and/or job creating for the benefit of community residents" (Krigman, 2010). The model seeks to bring local leaders concerned with community building and well-being together with a professional service staff capable of working with both the private sector and government to bring investment into under-served communities. They emerged in the 1960s and '70s when local activists made the decision to embrace an approach rooted more in capitalistic traditions than protest (Scally, 2012). This approach allowed CDCs to gain significant funding from a variety of federal, state, and philanthropic sources as they have grown into one of the largest providers of affordable housing in the country. An estimated 4,600 CDCs exist in some form or another today (Varady, Kleinhans, & van Ham, 2015). The large majority of these organizations have little funding and small staffs. They have developed a broad range of services such as homeowner counseling or budget/credit counseling to go along with a "high level of sophistication in packaging financing from multiple sources and savvy in dealing with other neighborhood organizations, local government, and intermediaries" (Varady, Kleinhans, & van Ham, 2015). This last skill is particularly important considering local engagement will be a critical component of any real estate development pursued by QOFs.

Critics of the Opportunity Zone program contend that funds will only flow to projects that would have already been financially viable or were on the brink of financial viability. While this observation is undoubtedly true, the sheer number of potential zones and the demonstrated interest of investors suggests that, once these first targeted deals are engaged, the opportunity exists for investment to overflow into other zones. Investors will be willing to make larger investments and pursue projects in new areas – provided they have the buy-in of the local community and the proper economic incentives to bridge the gaps that will inevitably exist. This area is precisely where CDCs, with their unique blend of community roots and financial capabilities, should be able to step in and meet this need. Perhaps no city presents a greater opportunity than New Orleans.

NEW ORLEANS' PRE AND POST KATRINA DYNAMICS

Internationally recognized for both its dynamic history and cuisine, New Orleans is one of the most culturally rich and diverse cities in the United States. Drawing from French, Spanish, Creole, and Caribbean influences, among others, the city has developed an unrivaled mixture of architecture, food, and music that draws an enormous number of visitors each year. The local population is intensely proud of this culture and is heavily invested in maintaining it, a fact underscored by census data that shows Louisiana contains the highest percentage of native born residents in the country (Aisch & Gebeloff, 2014). While residents and visitors alike revel in the unique and vibrant lifestyle the city affords, significant challenges exist–some unique to New Orleans and others similar to trends across the country.

Like many cities in the country, New Orleans is struggling mightily with the problem of housing affordability. According to HousingNOLA, a broad local coalition of public and private housing interests, New Orleans is in need of approximately 33,600 units of affordable housing over the next ten years (HousingNOLA, 2015). While New Orleans boasts one of the largest and busiest ports in United States, for most of the last forty years the economy has revolved largely around tourism. The city has developed nascent industries that include technology, healthcare, and aerospace, but there has simply not been enough activity to close the ever widening income gaps that exist.

Much of the problem is due to loss in the core income-producing population. Since its peak at 627,525 in the 1960 census, the city saw its residency decline by over twenty percent by 2000 to 484,668. This population loss was driven by the development of surrounding parishes through the draining of swampland to accommodate suburban housing, the construction of the Pontchartrain Expressway, Interstate 10, and Veterans Memorial Highway. By the 1970s over forty percent of the metropolitan area population resided outside of the city. A significant portion of this population was middle to upper income residents, further draining the tax base of the city (Lowe & Bates, 2013). The oil crisis of the 1980s all but sealed the fate of the local economy as most of the remaining oil and gas companies fled to Houston as that city surpassed New Orleans as the energy hub of the country. This disinvestment, coupled with the corrupt nature of Louisiana politics, led to a city that was in decline well before Hurricane Katrina wreaked havoc on the Gulf Coast Region in 2005.

Although various non-profit and philanthropic organizations operated in the city during this period, it was not until the 1990s that the problems of vacancy and blight caused by population loss were recognized and there were no community-based organizations engaging in any type of scaled affordable housing or real estate development (Lowe & Bates, 2013). Some twenty years after community development corporations had established themselves nationally, encouraged by Mayor Marc Morial's administration, several new CDCs emerged locally to rise to the task of redeveloping these blighted areas. Led by a newly formed local development partnership called the New Orleans Neighborhood Development Collaborative (NONDC), by 2000 nine CDCs had developed 625 housing units.

Throughout this progress, however, many of the same conflicts inherent in the growth of CDCs throughout the country also challenged the capacity of New Orleans organizations. CDCs exist in a constant state of tension brought about by competing interests. Local grassroots activists expect a CDC to use its capacity to promote the social well-being of local residents and empower them to take control of their own communities, a goal that is not easy to define (Knotts, 2006). On the other hand, the private philanthropic interests that provided most of the funding (in addition to federal Community Block Development Grants) expected to see quantifiable gains in areas such as housing and job programs. These challenges lead to issues in gaining the support of the numerous and separate neighborhood organizations whose buy-in is crucial to the success of any potential development. After the initial successes that led to positive gains in affordable housing, moving into the new millennium support for CDCs in New Orleans waned as national organizations pulled funds in pursuit of other goals and the NONDC changed its focus from a community partnership that brought together organizations across the city to a real estate developer focused exclusively on the Central City Neighborhood (Lowe & Bates, 2013). In the years leading up to Hurricane Katrina little was done at the community level to further affordable housing development and progress stagnated.

Hurricane Katrina, which impacted New Orleans and the Gulf Coast Region in August of 2005, forever altered the city's future. The five years prior had seen the City's population continue to shrink; the estimated pre-Katrina population in 2005 was 452,170, down from 484,668 in 2000. The extent of the damage varied greatly by neighborhood and generally favored the City's original historic footprint built along high ground near the Mississippi River. These areas, in addition to the entire West bank of the city, were largely spared. Still, over eighty percent of the City flooded, damaging 134,000 housing units – roughly 70 percent of the occupied housing stock at the time.

The first five years after the storm were a crucial period in shaping how the city would respond, however disorganization in the distribution of recovery funds and lack of a true all-encompassing redevelopment strategy held back progress. Plans were proposed by Mayor Ray Nagin's Bring New Orleans Back Commission (BNOBC), the City Council (the New Orleans Neighborhoods Rebuilding Plan – NONRP), and private philanthropic sources (Unified New Orleans Plan - UNOP). Each plan varied widely and in some cases were completely contradictory, with the BNOBC plan calling for almost an entirely redrawn map clustering development in key areas, the NONRP putting redevelopment decisions into the hands of individual neighborhood residents and ensuring the return of every pre-Katrina neighborhood, and the UNOP plan following a middle road, proposing a clustering of remaining residents and businesses within each specific neighborhood. All three plans, including an additional two provided by the community, were adopted—without reconciliation—as the official recovery plan by both the New Orleans City Council and the Louisiana Recovery Authority (Ehrenfeucht & Nelson, 2013). The result was an uneven distribution of population and resources that were stretched across a city that, despite a shrinking population, increased its developable footprint from 36.8 square miles in 1960 to 66.7 square miles in 2000. Today, New Orleans' population stands at 393,292, approximately 86 percent of it's pre-Katrina population.

DOWNTOWN'S RESURGENCE

Despite the lack of a unified direction, Downtown New Orleans and many of its surrounding neighborhoods have witnessed an unprecedented surge of investment over the course of the last decade. As the rest of the country plunged into recession in the aftermath of the 2008 Financial Crisis, New Orleans had already hit bottom in the wake of Katrina. Taking advantage of generous state and federal historic rehabilitation tax credits, developers began converting many of the existing buildings in the Downtown and Warehouse district areas into condominiums and apartment buildings, doubling the number of units in the market transforming the area into a 24/7 residential hub. The approximately $6.5 billion in investment over the prior decade has expanded options across Downtown. Projects such as the Domain Companies' South Market District, a $500 million

Figure 1. A view of the World Trade Center. The building is currently being renovated into a Four Seasons Hotel. Source: Wiki Images.

Figure 2. An aerial view of Mid-City New Orleans. Opportunity Zone locations are outlined in black. Source: Google Earth.

project consisting of nearly 1,000 luxury apartments and condominiums, 200,000 square feet of retail space, and a 40,000 square foot luxury grocer, have forever altered the landscape of the city. Currently underway is the $450 million re-development of the New Orleans World Trade Center into a Four Seasons hotel and condominium property. Charity Hospital, which was at one time the second oldest and second largest free hospital in the United States prior to being closed after Hurricane Katrina, is in the midst of a $250 million re-development process that could further add another major source of market-rate and affordable housing to the stock.

While the scope and scale of these developments have been impressive, much of the increase in supply during this period is attributable to hotel rooms catering to the ever-dominating tourism industry and higher end apartments and condominiums. This momentum has not carried over to the problem of affordable housing and in many instances has exacerbated it. Prior to the storm much of the city's lowest income residents were housed in one of five large public housing sites: B.W. Cooper, C.J. Peete, Lafitte, St. Bernard, and Iberville. Collectively these sites accounted for approximately 6,000 units of affordable housing. Due to the irreparable damage done to these buildings by the storm, in addition to the fact that they had become a constant source of crime and disruption, a decision was made to demolish them in favor of new, lower density mixed-income developments. These efforts have succeeded in decentralizing poverty but at the loss of thousands of affordable units closer to the city core. The former residents instead rely on voucher programs to use for private residences. Community groups

Figure 3. A close aerial view of New Orleans Opportunity Zones. Source: Google Earth.

Figure 4. A far aerial view of New Orleans Opportunity Zones. Source: Google Earth.

and developers have had modest success in building single-family affordable homes on the thousands of blighted lots that checker the city, with demand far outstripping supply. This continuing imbalance reinforces the fact that more large-scale affordable residential development is needed. The Opportunity Zone program, if properly used, presents this kind of chance for New Orleans.

NEW ORLEANS' OPPORTUNITY

In reviewing the areas of New Orleans that have been designated as Opportunity Zones, the city appears to be well positioned. Of the 23 designated Opportunity Zones in New Orleans, 16 are in neighborhoods within a 5-10 minute drive time of Downtown New Orleans. The biggest impediment to development in these areas, however, is that the majority of these neighborhoods are typical to New Orleans: low density single family homes with scattered small multi-family apartments. There are simply not many contiguous development parcels that would support a large scale development project. In hindsight, in the years immediately following Katrina, had the City been able to effectively "right-size" at least some areas in order to open up areas for future growth, the potential for massed investment through the Opportunity Zone Program would be much greater. For obvious and legitimate political and socio-economic reasons, however, this was not a viable option (Ehrenfeucht & Nelson, 2013). Despite these challenges, a significant opportunity does exist in the four zones that cover a significant portion of the Mid-City Area of New Orleans.

Much like the majority of neighborhoods, the Mid-City area of New Orleans suffered significant flood damage due to Hurricane Katrina. Although a majority of the district is residential in nature, its area directly Northwest of Downtown New Orleans and the French Quarter have seen a surge of investment in the last three years. Two major investments changed the course of this area. First, the $2 billion construction of the University Medical Center and Veterans Affairs hospitals permanently altered the trajectory of the neighborhood. Built on approximately 70 acres of land that was expropriated from a historic district, the controversial project was completed in 2015 and has dramatically shifted investor sentiment on both the Tulane Avenue and Canal Street corridors, bringing in thousands of full time jobs in the medical and bio-medical industries. Further to the Northeast, the second project, the Lafitte Greenway, also opened in 2015. A city sponsored project, an old railroad right of way was repurposed into 2.6 miles of bicycle and pedestrian trails, athletic courts, playgrounds, and green space that connects the French Quarter with the Bayou St. John neighborhood, one of the cultural bastions of Mid-City. Considering their location close to the tourist hub of the downtown area, the areas surrounding these projects are ripe for further development that could take advantage of opportunity zone locations to the benefit of local residents. The project has spurred significant investment and development along the entire greenway and, at a cost of $9.1 million, is a testament to the ability of municipalities to foster economic growth with little up-front investment.

Despite the disarray with which it pursued recovery in the years immediately following Katrina, in 2010 New Orleans took a major step forward with the adoption of a Master Plan. Up until that point in its history the city had relied on a hodgepodge of local zoning ordinances that did not give much thought to any over-arching, long-term idea of what the city might be. Most recently updated in 2015, the Master Plan, while not ground-breaking by any means, provides an in-depth view of the future potential for development. Most encouragingly, it seeks to embrace high-density mixed use developments, identifying ten "opportunity sites" across the city that have the potential for such projects and indicating that the city would be willing to work with interested developers in pursuit of these goals.

Only one of these sites, a 6 acre parcel of land called Poydras Row, is located within the Mid-City Area and also in an Opportunity Zone. The city's call for action from developers should be noted, however, for this is where the intersection of Opportunity Zone investors and CDC's can come together to find creative development solutions across the board. Poydras Row is not the only potential developable site in the Mid-City Opportunity Zone area. Large portions of Mid-City are industrial in nature or are surface parking for the hospitals and medical school. Tulane Avenue itself has many sites that are ripe for re-development, although surging land prices around the hospitals may preclude affordable housing. The City's willingness to identify opportunity sites and open the door for development suggests an inclination to help make these denser projects a reality through various creative means. CDCs, in addition to the numerous other public/private organizations in New Orleans such as HousingNOLA, Greater New Orleans, Inc., and Friends of Lafitte Greenway have a unique opening to work with local stakeholders and match potential sites with QOFs.

The immense interest and attention the Opportunity Zone Program has received since its inception is well-deserved. The program has great potential to transform some of the country's most historically down-trodden areas. As the regulations are finalized in the coming months more investors will continue to come to the table. The long term success or failure of the program rests in the ability of public-private partnerships to bring all stakeholders together and match incentives to investment with the needs of the community. New Orleans, having made significant progress in the last three years, is poised for future growth. Opportunity zones, if worked correctly, present a chance to bring this growth to all members of the community.

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Modular Construction: A Solution To Affordable Housing Challenges

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INTRODUCTION

The lack of affordable housing is pervasive across the United States. It affects some locations more severely than others, with each having unique challenges. Construction and land acquisition costs are frequently cited as primary drivers of multi-family housing development, and affordability is determined by a geography's housing costs versus its median income. This paper highlights crucial components in the connection between economic conditions, public policy, and affordable housing development. It focuses on how efficiencies in modular construction present opportunities for addressing specific challenges in Maine and will propose a strategy for public-private cooperation, particularly in the site selection process, in order to streamline the state's affordable housing agenda.

THE AFFORDABILITY PROBLEM

Housing affordability has plummeted in markets across the United States. Developers have shunned affordable housing due to insufficient returns and complex financing processes. The crisis has no apparent solution, so government intervention has been deemed necessary for housing millions of at-risk Americans. The most common form of government housing assistance is the Department of Housing and Urban Development's (HUD) Section 8 program. The program provides housing vouchers to residents making between 30-80 percent of the area median income (AMI), so that they may select the most suitable housing options. Other solutions include the U.S. Department of the Treasury's Low-Income Housing Tax Credit (LIHTC), which offers an income tax incentive to developers who elect to designate a certain portion of their units in multi-family developments as affordable.

A. A Brief History of Supply and Affordability in the U.S.

The 1930's brought unique challenges to housing affordability due to displacement caused by the Great Depression. In 1934, Congress created the Federal Housing Administration (FHA), which helped make home ownership possible for disenfranchised Americans by providing access to long term mortgages with low down payments (NLIHC, 2015). Public housing appeared in 1937 through the U.S. Housing Act and in 1965 Congress created the cabinet office of Housing and Urban Development. Along with the U.S. Department of Agriculture's (USDA) Rural Development program, these are the primary players in today's government subsidized housing programs (NLIHC, 2015).

Beginning in the 1970's, oversight of public housing and the allocation of federal funds was handed down to state and local regulatory bodies. This shifting of responsibility allowed geographic areas flexibility in addressing the specific needs of their communities, which, as we will see later, varies widely. In addition to funds appropriated by Congress, states and municipalities can generate their own housing assistance initiatives—often presenting themselves today as ad hoc agencies with particular sets of values and goals. This has been an increasingly important source of funding for high-need families, as federal policy has tended towards disinvestment in housing programs in recent decades (NLIHC, 2015), and market forces and philanthropy alone cannot meet the deficiency.

B. Current Solutions Fall Short of the Mark

In eight short decades, the political environment for housing assistance has changed dramatically, causing the financing of affordable housing projects to grow frustratingly complex. Such development projects often contain over 20 investment sources, each essential to the capital structure. Most of these different sources are independent of one another and contain different application processes and timelines. Developers must be diligent about fulfilling guidelines and reporting requirements as well as the requirements of their own equity investors (Blumenthal et al., 2016). Outside of Massachusetts and Michigan, no state entities coordinate the myriad public funding sources.

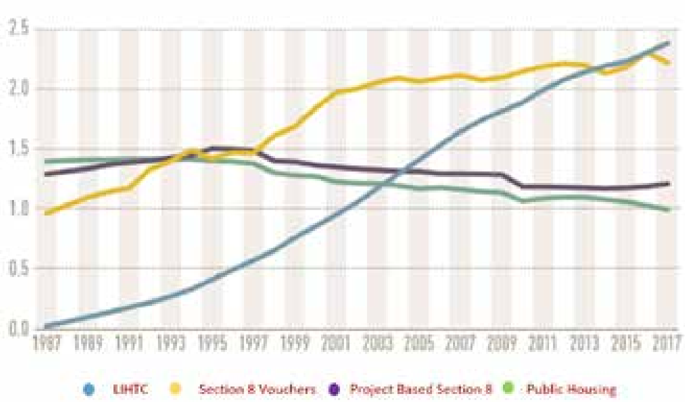

Figure 1. Common sources of housing subsidies for Low-Income Housing projects. Source: JCHS tabulations of HUD, 2015.

Administered by the US Treasury, the Low-Income Housing Tax Credit is currently the most important funding source. It is utilized in most subsidized development projects, having supported nearly 2.5 million projects since its inception in 1986 (Joint Center for Housing Studies, 2018) and is currently the largest source of subsidized housing, surpassing Section 8 Vouchers in 2016.

One of criticisms of the LIHTC program, however, is that it provides self-defeating incentives. In *Rethinking Federal Housing Policy*, Glaeser and Gyourko explain how LIHTC is an incentive for developers to provide housing only for the highest earners in low-income designations, without any compulsion to go above the minimum requirement (Glaeser & Gyourko, 2008). Moreover, the LIHTC program is sensitive to sweeping changes in tax policy, such as the 2018 Tax Cuts and Jobs Act. The reduction in the corporate income tax rate has effectively reduced the value of LIHTC projects, creating difficulties for developers seeking competitive returns.

Conversely, housing voucher programs like Housing Choice (previously known as Section 8) directly benefit recipients by allowing them to choose from existing accommodations, whether close to medical facilities, schools, or places of employment, they find most suitable. Voucher programs have had successes, but remain incapable of facilitating enough housing to meet demand. Wait times for vouchers have exceeded 30 months according to HUD's Worst Case Housing Needs report, and additional funding of $12 billion from 2005-2015 has increased the availability of subsidized households by a mere 150,000, amounting to $80,000 per household. Meanwhile, the number of additional very low-income households has exceeded the added accommodations by over two million in that same period, and it is estimated that fewer than 200,000 affordable units will be put in place this decade (JCHS, 2018).

C. Market Forces Affect Developer Attitudes

Two key drivers of multifamily housing starts have produced unfavorable conditions for low-income households: the cost of construction and availability of skilled labor. Scarcity in the construction labor market has driven up wages by 3.8 percent over the past year, nearly 1 percent in excess of the growth in total private sector wages. That number reaches 5 percent for workers in the residential construction industry (US Bureau of Labor Statistics, 2017). This predominantly affects housing starts of lower-priced units, which cannot absorb higher input costs without sacrificing margins. Indeed, considering the rising costs of construction, the margins on lower priced units are already razor thin, if feasible at all.

Tariffs imposed by the new White House administration have affected housing prices, notably for steel and aluminum products essential to construction. Overall, the Producer Price Index (PPI) for inputs to new multifamily construction has risen by 6.6 percent since October 2017 compared with a rise in the Consumer Price Index by only 2.3 percent over the same period (Associated General Contractors of America, 2018). Fears of tariff-burdened soft wood lumber from Canada have been temporarily allayed in the wake of a new NAFTA agreement, however, builders continue citing material costs as their second highest concern (National Association of Home Builders, 2018).

The effect of unfavorable market conditions has negatively correlated with housing starts over the same period. The most recent joint report of the U.S. Census Bureau and HUD indicated that multifamily housing starts have declined by 4 percent year-over-year in October 2018, equating to 14,000 fewer units (US Census Bureau, 2018). More illuminating is the National Association of Homebuilders (NAHB) Multifamily Production Index (MPI) that indicates developer sentiments about the multifamily housing market. This index has witnessed an increase in low rent multifamily prospects of nine percent from Q3 2017, indicating renewed enthusiasm (NAHB, 2018). Affordable housing in America has come to a tipping point and the industry is ripe for disruption.

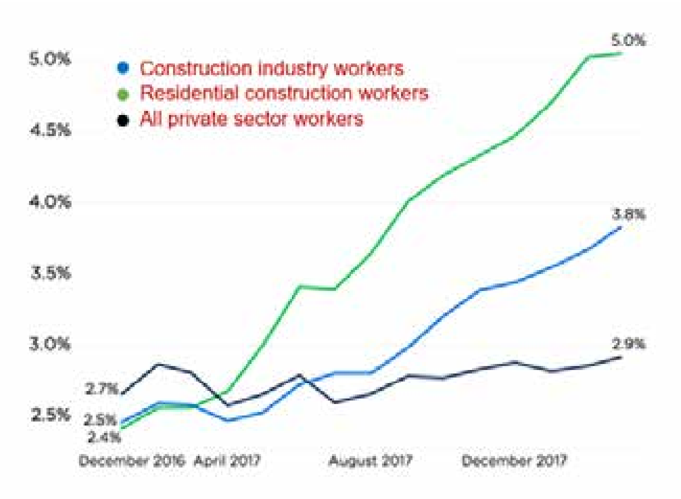

Figure 2. Year-Over-Year % Wage Growth (12-month moving average)
Source: US Bureau of Labor Statistics, 2018.

OPPORTUNITY

Savvy developers may soon capitalize on changes in affordable housing in the most troubled US markets thanks to innovations in design and production methods in modular construction. Recent improvements in manufacturing throughput and building material used in modular construction have reduced the cost-to-market with respect to both multi-family rentals and single-family home applications. Many factory-based modular firms operating on the West Coast claim the capability to deliver housing units at half the cost and in half the time as traditional site-built units. Whether these claims manifest themselves remains to be proven, however case studies show that modular construction reduces the construction schedule by 45 percent as the process is inherently insulated from budget variance (Smith & Rice, 2015).

A. Benefits of Modular Construction in Brief

Modular construction is distinguished from general off-site construction. The latter is performed in a climate-controlled factory environment and utilizes assembly line technology to construct building components for transportation to a construction site. These components vary from structural insulated panels (SIPs) to precast concrete. Modular construction, conversely, is the off-site construction of complete modules assembled together in the form of much larger buildings, i.e. townhouses, apartment complexes, and even high-rise offices. Historically, these modules have been used primarily as detached housing units, where they are assembled upon a permanent chassis and transported to prepared building sites. The first of these types of buildings were in use during World War I, as military "mobilization buildings." The U.S. and British armies first issued standardized plans for temporary structures in 1914 designed to be assembled and dismantled efficiently during wartime (Garner, 1993).

Today, numerous modular building manufacturers exist around the globe, and the industry has benefitted from renewed interest from investors. Katerra is one such company. The firm has enjoyed a large capital influx from the venture capital firm SoftBank, allowing them to conduct the R&D necessary to improve U.S. construction productivity. Other modular building firms include Blokable in Washington state, and Guerdon Building Systems based in Boise, Idaho.

Productivity in construction has significantly lagged other industries in the past century. A recent report by McKinsey & Company found that productivity gains in construction have stagnated at around 6 percent since 1945, while gains in manufacturing, retail, and agriculture exceed 1500 percent in the same period. This is due to the fragmented nature of construction driving thin margins. Construction culture in the United States is informally operated, yet highly regulated, and thus knowledge management in this industry has been sporadic and undervalued (McKinsey & Company, 2017).

Realizing productivity gains of other industries is no small task. Construction is inherently a bespoke process, with each project entailing building-specific and site-specific requirements. Even in the face of these challenges, however, modular construction has proliferated in Asia and Europe where cost savings exceed 30 percent in modular projects (WSP, 2018). The qualitative benefits of modular construction are not only compelling, but quantifiable cost savings will also drive investor interest in modular building techniques, particularly for affordable housing scenarios.

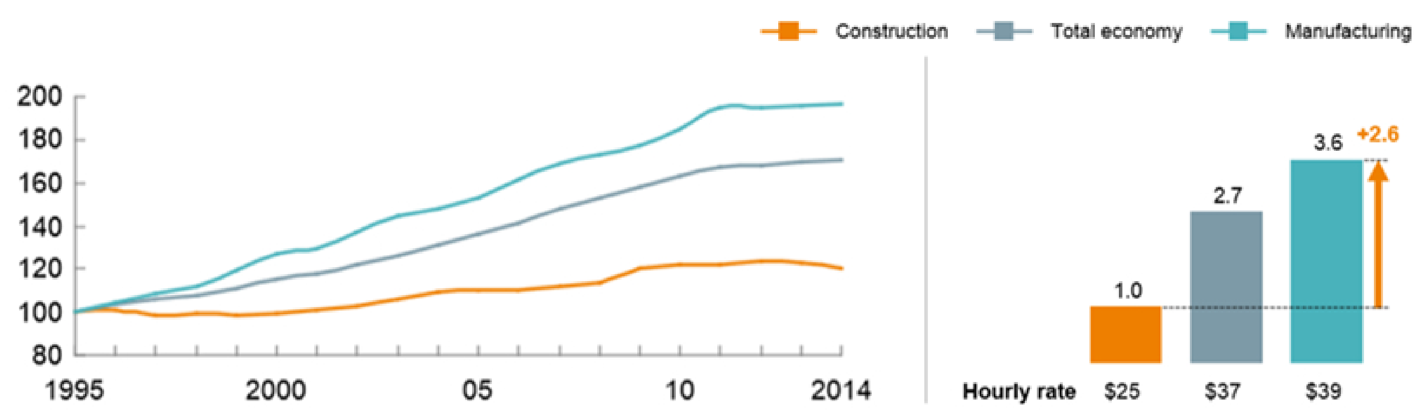

Figure 3. Labor productivity growth in construction industry versus manufacturing and total economic output. Source: McKinsey Global Institute Analysis, 2017. (Left): Real Gross value added per hour worked by persons engaged, 2005 $ (Right): Compound annual growth rate, 1995-2014 (%) Index: 100 = 1995.

B. Drivers of Affordable Housing Starts

Affordable housing development is driven by similar factors as market rate housing, though with exceptions. One important component driving feasibility is the environment for public subsidy. In recent years, public assistance programs have trended towards disinvestment in affordable housing programs, though, as shown earlier, developers have shown increased optimism for affordable multifamily projects in the past year.

Much of this speculation stems from the risk profile of luxury condos and rentals. Units on the higher end of the price spectrum are locked in a costly positional arms race to provide incrementally better amenities and the best tenants, including costly concessions such as free rent, yet the average sizes of these rentals are static. As the standard of amenities and fixtures in market rate rentals is growing, low-income housing standards remain largely unchanged, with most qualifying families satisfied to have a safe and suitable home. More risk-averse investors can find consistent revenue streams and high occupancy rates in low-income multifamily investments. These types of investment vehicles are also insulated from volatility in the economy because they are exhaustively underwritten and much of the funding is backed by the U.S. government. While high-end luxury and market rate offerings have saturated many urban and suburban markets, a strong demand for workforce housing remains.

The fragmented nature of affordable housing funding sources is a primary impediment to projects getting off the ground. In many jurisdictions, applicable funding is plentiful, yet developers find the requisite approval processes to obtain incentives cumbersome. Inclusionary zoning policies also do little to encourage affordable housing supply and can even deter affordable development. For example, the cost of apportioning ten percent of a multi-family development as affordable may require additional floors to satisfy the requirement. Rather than shouldering this extra cost, developers often opt to build in other jurisdictions, or become discouraged from building (Bertolet, 2017).

Recently, efforts have been made to streamline review processes for affordable housing projects, particularly on the West Coast. For example, several permitting districts in Washington State have enacted provisions for expedited review in areas with high public demand. Some cities offer combined public hearings and designated liaisons to assist in navigating the process. Perhaps most relevant to modular construction project is the concept of pre-approved designs. This type of policy has gained wide popularity with respect to single-family approvals, but has yet to gain traction on the East Coast. The process involves a jurisdiction pre-selecting architects to compile a library of approved plans, usually through a competitive bid process. Developers and builders then purchase the plans from catalogs with ease. This process, in conjunction with other measures, can facilitate affordable development across the country and should be applied in cost-burdened states.

MODULAR MULTIFAMILY IN MAINE: STRATEGIES FOR THE PINE TREE STATE

Consider Maine as an example. It is home to a population of 1.3 million, ranking it the 42^{nd} most populous state as well as the least densely populated east of the Mississippi River (US Census Bureau, 2018). Still, most of the state's population is concentrated along its Atlantic Coast. Maine's population has been aging steadily in recent decades as the Baby Boomer demographic grows older. Among New England states, it has experienced a significant population shift towards retirement age. Maine, New Hampshire, and Vermont, have the oldest average age. Maine's average has risen from 38.6 in 2000 to 44.7 in 2017 (Colgan, 2006). Among several contributing factors is the "brain drain," in which young Mainers continue to move to more populous and higher paying markets.

Just as Maine's human capital flocks to major cities, its retirement population trends from seasonal visits from the Boston and New York towards year-round residency. Opposing migration patterns have increased Maine's elderly population and deteriorated its median annual income. As of 2017, Maine ranked 44^{th} in the United States for median annual household income at $50,856 per year: nearly 13.9 percent below the national median (US Census Bureau, 2017). Meanwhile, rental rates have increased over the

Figure 4. A modular multifamily rental project, Bethany, OR. Source: M.O. Stevens, 2016.

same period. In 2000, the median monthly rent was $861, while in 2015 median rentals exceeded $1600 (Maine State Housing Authority, 2017).

Many of the issues exacerbating rising rental rates can be attributed to the supply-side of housing. For instance, much of the housing stock in coastal communities has transitioned to short-term rentals. Maine exceeded the national average of seasonal housing stock by nearly twelve percent in 2006 (Pollakowski, 2009). Increasingly, housing located where fisherman and mid-coast employees work is being taken out of the year-round rental stock as they become more profitable as vacation rentals. Residents of these communities find themselves traveling longer distances to reach employment.

Long distance commuting costs severely impact Maine's affordability ranking (NLIHC, 2015). Case studies have shown that, due to the state's geography and infrastructure, the cost of commuting to primary employment areas puts units in otherwise affordably priced areas out of reach (Pollakowski, 2009). While developers have scaled back multifamily construction in Maine due to outmigration, renter households have *increased* in Maine by 6.6 percent since 2015, and 21.1 percent since 2000 (US Department of Housing and Urban Development, 2018). An increasing disconnect is evident between supply and demand, yet no market solution has been reached.

A. Role of the Public Sector

Adopting streamlined regulatory processes is one viable way for states like Maine to bring more units online. States should allow municipalities to enact pre-approved permits for certain housing projects deemed highly-desirable. These pre-approvals may also come with a package of common, streamlined requirements in order to obtain funding from the plethora of publicly available funds at minimal administrative effort and cost. States should also consider creating policies that prioritize subsidies and approvals for modular construction. Modular projects minimize unforeseen cost overruns and environmental concerns. For these reasons, they are more amenable to public-private partnership. Streamlining the site selection process would alleviate many of the bureaucratic and financial hurdles faced by developers. A common set of criteria for site selection allows a committee to preselect municipally owned lots, which could be earmarked for affordable housing development in the future through a competitive bidding process.

B. Side-by-Side Comparison

A side-by-side analysis of an affordable housing project was performed in 2010 by a housing developer in Maine. The study compared modular construction versus traditional site-built construction. Off-site construction allows the builder to pre-install much of the plumbing and wiring at a rate exponentially lower than the prevailing wage rate for skilled electricians, plumbers, and mechanical subcontractors.

What is most important, however, from the standpoint of feasibility and financing, is the bottom line. In this case, the two processes were comparable in price. In fact, the modular construction process came in almost $60,000 higher than the traditional method, or 1.7 percent. Whether these costs reflect a fair markup on the true costs of modular construction versus the price that can be achieved in a competitive market remains to be explored, but for the sake of this study we will consider the hard cost advantage to be marginal.

The first important takeaway from the study is that it was compiled in an era of drastically different economic conditions. The year 2010 followed a severe recession, particularly for the homebuilding market. Today's macroeconomic environment reflects a nearly 180-degree difference. As reported previously, both construction wages and material costs have risen dramatically since 2015 to their prohibitively high 2019 levels. Extrapolating relevant data can increase the accuracy of the results of this study using the prevailing rates of today's economy, specifically in Maine.

The first important takeaway from this example is that it was compiled in an era of drastically different economic conditions. The year 2010 followed one of the most consequential recessions in modern history, particularly for the homebuilding market. Today's macroeconomic environment reflects a nearly 180-degree difference. As reported previously, both construction wages and materials costs have been on the rise dramatically since 2015 to prohibitively high levels today, in 2019.

We may get a more accurate reading of the results of this study by extrapolating the data using the prevailing rates of today's economy, specifically in Maine. According to the Maine Department of Labor, rough carpenters in Cumberland County, where the study was conducted, earn nearly 15.5 percent more in 2019 than in 2010 ($19.92 versus $17.25) (Maine Department of Labor, 2010, 2019).

When applying this generally to the labor portions of the study, and taking into account previous studies of the labor savings relative to modular construction (see WSP, 2018), the modular method would realize additional savings of roughly $79,000. Likewise, construction materials have increased 25.2 percent from January 2010 to December 2019 according to the Producer Price Index (FRED, 2019). Considering the portion of materials used in construction relative to total hard costs and the waste reduction factor attributable to modular construction, a survey of 809 architects and engineers found that 44 percent reported a savings of at least five percent (Bernstein et al., 2011). Using a figure of five percent materials savings for such a project, there is potential for an additional cost savings of roughly $20,000. The effect of time and market conditions indicates that today's environment may tip the scales in favor of a modular construction method by a margin of nearly $50,000 – which does not include the qualitative benefits of greener building, more streamlined process, increased safety, and less variability due to external forces.

CONCLUSIONS

There are numerous of reasons to consider more research with respect to the use of modular construction, particularly with respect to multifamily applications in affordable housing development. In summary, the benefits of modular construction are as follows:

3. From a qualitative standpoint, modular construction has been shown to increase workplace safety, decrease the risk of unforeseen environmental risks to the project, promote the ease of assembly, and compress total construction schedule.

4. From a quantitative standpoint, modular construction has been shown to reduce hard and soft costs by 10-20 percent, decrease the number of change orders to fewer than six, reduce the construction schedule by up to 45 percent, and increase labor productivity by greater than 30 percent.

On the other hand, the modular construction industry has experienced significant barriers that have hampered its ability to capture market share, including:

5. Modular construction has a stigma associated with products brought to market immediately following World War II. Modular construction is also often associated with mobile home communities, more commonly "trailer parks", and are perceived as a lower quality product than site-built units. Ironically, modular construction is markedly more resilient due to its ability to be transported from factory to site.

6. Facilities which produce modules are static by nature and sparsely located. Particularly on the East Coast, there are few companies producing the types of modules which are sophisticated enough to meet the requirements of today's multifamily projects. Transportation of the modules is cost-prohibitive in rural states where the need is greatest.

7. Financial and governmental regulatory structures are not conducive to modular construction. There is a limited understanding of modular construction and underwriting standards in many jurisdictions. As more projects come online in the coming years with respect to multi-family applications, this will become less of an issue.

In the past decade, manufacturing technology, facilities and process design, and state-of-the-art construction materials have greatly improved the productivity of off-site construction. The trend of investment in research has been largely absent in the construction industry, though the impetus for change has been driven by the fall, and subsequent rebound, of the housing market following the 2007-2009 financial crisis. The latter half of this decade has seen construction wages, labor and materials prices increase the cost of development, giving many developers reason to seek cost-cutting and efficiency measures such as the ones realized by prefabrication.

Modular Construction is not yet suitable for all market segments but has shown a great deal of promise in addressing the critical shortage of low-income housing solutions. First, this method has the ability to bring more units onto the market much more quickly than traditional methods. Finally, it is an inherently predictable project, which may ultimately lead to more favorable underwriting standards and cheaper financing. These reasons make modular construction an attractive option for addressing affordable housing needs in cost-burdened states like those in Northern New England.

Both the public and private sectors have an active role to play in adopting this method. Private developers must exhibit a newfound willingness to participate in building for this underserved population, but in order to do so, capital and regulatory environments must be competitive. The public sector can address these deficiencies by adopting measures that make the permitting process less onerous, such as cataloging preapproved designs, and taking an active role in site selection and acquisition. Only through a willingness to address these issues will policy enable construction performance to meet the goals of affordable housing.

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Rising Tourism in Saudi Arabia:

Implications For Real Estate Investment

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INTRODUCTION

Over the last few years, the Kingdom of Saudi Arabia (KSA) has pursued a more aggressive approach towards economic diversification in order to plan for the future of its youth as nearly 60 percent of the country's 3 million citizens are under the age of 30 (KSA-General Authority for Statics, 2017). Saudi Arabia traditionally has relied heavily on the public sector to absorb many of the educated Saudi nationals. However, the country is now looking to the private sector to create more jobs for its burgeoning population and has enacted policies that ease doing business in the country and make it more accessible to the outside world.

Considered one of the world's most insular nations, Saudi Arabia is now investing billions of dollars to become more open under its Vision 2030 reform program. The Kingdom is making a large investment in tourism with the recent announcement of several gigaprojects as well as with the recent completion of several major projects, including the renovation and expansion of the Grand Mosque (Masjid Al-Haram) in Mecca and the Prophet's Mosque in Medina in order to accommodate an increase in religious pilgrims.

NEW VISA POLICIES

Saudi Arabia has had some of the strictest visitor policies of any country. Visitors have only been able to obtain either religious pilgrimage visas for hajj or umrah or business visas in which they must have a local corporate sponsor. The hajj and umrah visas are strictly regulated and are only valid for thirty days. The number of people making these pilgrimages from outside of the country is heavily regulated by the government in order to control those entering and leaving Mecca and Medina. Under the hajj/umrah visas, pilgrims have not been allowed free access to other cities in the country (Toumi, 2018).

Recently, the Saudi government has created new tourist visas allowing visitors easier access. In September, the country announced plans for a new electronic visa process called Sharek to allow racing fans to enter the country to attend an inaugural Formula E racing event near the capital of Riyadh (Kournelis, 2019). Also, the country relaxed hajj/umrah visas regulations to allow religious pilgrims to visit all cities within the country during their thirty day visit. (Toumi, 2018).

PUBLIC INVESTMENT RESTRUCTURING

Established in 1971, the Public Investment Fund (PIF) is Saudi Arabia's sovereign wealth fund. Since its creation, the fund has primarily invested in major projects within the Kingdom. In recent years, the fund has undergone major restructuring, focusing on projects that support the country's Vision 2030 plans as well as making major investments outside of the country. In 2015 oversight of the PIF was moved from the Ministry of Finance to the newly established Council of Economic and Development Affairs (CEDA). Crown Prince Mohammed bin Salman assumed the position of Chairman of the PIF. The fund currently holds $150 billion in assets in Saudi-based companies and has a total of $230 billion in assets (Algethami, 2018). A major source of expected funding was to be an IPO of the state-owned oil company Saudi Aramco, announced in 2016. Although this IPO has stalled, the PIF hopes to control more than $2 trillion by 2030 (Algethami, 2018). The PIF is currently the tenth largest sovereign wealth fund in the world, ranked behind the Abu Dhabi Investment Authority (ADIA) and the Kuwait Investment Authority (Daye, 2018).

Since its restructuring, the PIF has made a plethora of moves to support Vision 2030. Investments outside the country have included a five percent share in the ride-sharing giant Uber, which is valued at $3.5 billion (Hook, 2016), and a $90 billion investment in the Japanese tech conglomerate Softbank (Hamilton, 2018). In Saudi Arabia, the PIF has backed several major projects. In 2016, the ownership of the King Abdullah Financial District was transferred from the Public Pension Agency (PPA) to the PIF (*Arabian Business*,

Figure 1. Pristine island in the Rea Sea archipelago (Photo Credit: Red Sea Development Company).

2016). The King Abdullah Financial District is a major office development consisting of a cluster of skyscrapers in the northern section of the capital of Riyadh and was established as a hub for banking and financial institutions. Construction of the project, which spans over 1.6 million square meters, first began in 2006. Since then, the project has floundered and, as of 2014, the total investment of the PPA exceeded $8 billion. PIF has committed to rescue the project by changing the real estate mix to include not only commercial office space but also residential and hospitality developments (*Arabian Business*, 2016).

GIGAPROJECTS

With this shift toward developing the Kingdom into a major travel destination, the country has announced several gigaprojects whose scope expands across vast swaths of land and will require trillions of dollars of public and private investment. All of these projects have spurred the creation of subsidiary companies managed by the PIF. Some of these projects have been designated Special Economic Zones, which allow them to establish their own laws of governance independent of the rest of the Kingdom.

The futuristic city of Neom is the most ambitious of Saudi Arabia's projects. Crown Prince Mohammad bin Salman announced the creation of this new city in the northwest of the country in the fall of 2017 (Daye, A., 2017). With a cost of $500 billion, the proposal calls for the creation of a city in the desert near the border with Jordan and across the Gulf of Aqaba from Egypt. Neom is expected to be one of the most technologically advanced communities in the world. In October of 2018, an advisory board was announced, comprising industry professionals with a variety of backgrounds including urban planning, architecture, design, technology, sustainability, energy and manufacturing (Neom, 2018). The company now has over 125 employees (LinkedIn) and has announced that it will start building homes in Neom Bay for completion in 2020 (Pukas & Flanagan, 2019).

Another ambitious addition to Saudi Arabia's tourism offerings is the Red Sea Development Project, a massive tourism destination project spanning a fifty island archipelago stretched over 17,000 square miles along the northern Red Sea coast. The site is located nearly 350 miles north of Jeddah and features a maximum temperature of 93-degrees Fahrenheit in the summer, in sharp contrast to temperatures in Jeddah and Riyadh, which easily can exceed 100 degrees Fahrenheit. In addition to pristine beaches, the site is easily accessible to dormant volcanoes and is about 100 miles from Mada'in Saleh, a UNESCO World Heritage Site. Similar to Neom, the Red Sea Development Company has established an advisory board that includes several world-leaders in business, tourism, environmental sustainability and conservation. In January of 2019, the master plan for the project was approved. The overall project is expected to add 70,000 jobs, attracting one million tourists per year and adding $5.86 billion to the Saudi GDP (Bridge, 2018). The first phase of the project is scheduled for completion in 2022 and includes 14 luxury and hyper-luxury hotels. This phase will add 3,000 hotel rooms across five islands (Bridge, Sam, 2019).

Coined the "Riviera of the Middle East," Amaala is a hyper-luxury resort also along Saudi Arabia's Red Sea coast (News, 2018). Smaller than the Red Sea Development Project, Amaala is billed as an exclusive destination that will focus on wellness, healthy living, and meditation. The project is expected to create 22,000 jobs in hospitality

Figure 2. Dormant volcanos are a part of the natural wonder inside Saudi Arabia (Photo Credit: Red Sea Development Company).

Figure 3. Arial view of the Red Sea (Photo Credit: Red Sea Development Company).

Figure 4. Mada'in Saleh a UNESCO World Heritage site; home of the ancient Nabatean Kingdom (Photo Credit: Flikr).

Figure 5. Mada'in Saleh a UNESCO World Heritage site; home of the ancient Nabatean Kingdom (Photo Credit: Red Sea Development Company).

and tourism, leisure, and retail. (*News*, 2018). The initial architectural renderings show the project covering over 2,300 square miles and include more than 2,500 hotel keys and 700 residential villas (Dyer, 2018).

Meanwhile, Qiddiya is a large entertainment district proposed on the outskirts of Riyadh. Located 25 miles from the Saudi capital and covering an area of 200 square miles, it is claimed that it will be the largest entertainment district in the world (Obaid, 2018). Upon completion, Qiddiya will include theme parks, entertainment centers, sports amenities capable of hosting international competitions, training academies, desert and asphalt tracks for motorsport enthusiasts, and water and snow-based recreation. The proposals also include adventure activities alongside nature and safari experiences, with historical, cultural, and educational activities and events. Qiddiya is to be completed by 2030, attracting 17 million people annually and contributing $4.5 billion to the country's total GDP (Obaid, 2018). A master plan is expected to be finalized in early 2019 (Kader, 2019).

At the end of 2018 another major planned destination was announced: Wadi Al Disah. It is proposed to be an ecotourism destination within the Prince Mohammed bin Salman Nature Reserve (Pradeep, 2018), resting in the Al Disah Valley, with its tall mountain forms located southwest of the city of Tabuk.

ISLAMIC TOURISM

The long-term strategy of Saudi Arabia is to make it inviting to the rest of the world. In the short term, however, it will continue to capitalize on its position as the birthplace of Islam and the site of the annual hajj which draws millions of Muslims each year. Currently, religious tourism only accounts for two to three percent of the total GDP. With recent major expansion projects to Masjid Al-Haram in Mecca and the Prophet's Mosque in Medina, under Vision 2030, Saudi Arabia is looking to double the number of pilgrims making hajj and umrah to 15 million and 5 million, respectively, by 2020 (Kingdom of Saudi Arabia, 2016).

In addition to the increasing the number of pilgrims entering the country for hajj and umrah, Saudi Arabia is seeking to expand its heritage tourism offerings. Under Vision 2030, the country is committed to building the world's largest Islamic museum as well as to doubling its UESCO World Heritage Sites (Kingdom of Saudi Arabia, 2016).

INCREASE IN HOTELS

Saudi Arabia is already seeing an increase in the number of hotels across the country. Currently there are over 80 hotels under construction across the Kingdom, accounting for 27,281 rooms. This is growth is in major cities such as Riyadh, Jeddah, Mecca, and Al Khobar (Abdel-Razzq, 2018). Many international brands are seizing the opportunity to strengthen their position in the Saudi market. Khobar Kamel Ajami, the VP of Operations for KSA & Levant Hilton, remarked: "Saudi Arabia is one of the most important markets in this region, with new legislation and government reforms making the Kingdom more accessible than ever. It represents our largest development pipeline" (Abdel-Razzq, 2018).

LOOKING AHEAD: OPPORTUNITIES & CHALLENGES

The potential expansion of Saudi Arabia's tourism sector provides several challenges and opportunities. Among these challenges are the need to acculturate Saudis to

Figure 6. Marina concept for the Red Sea Development Project (Photo Credit: Red Sea Development Company).

Figure 7. Island concept for the Red Sea Development Project (Photo Credit: Red Sea Development Company).

Figure 8. Mountain concept for the Red Sea Development Project (Photo Credit: Red Sea Development Company).

Figure 9. Marina concept for the Red Sea Development Project (Photo Credit: Red Sea Development Company).

careers in the hospitality industry, the continued integration of women in the workforce, and the questions associated with maintaining sustainable transportation options, water and power sources, and adequate sanitation infrastructure.

Saudi Arabia's drive to expand its tourism is largely predicated on its desire to provide private sector jobs for the millions of young people who are either unemployed or underemployed. Under Vision 2030, the hospitality and tourism industry serves as a major employer of these citizens. Many of the projects that are either under construction or proposed will create thousands of jobs. With that being the case, there is a major obstacle of educating and acculturating Saudis to careers in the hospitality industry. Many Saudis typically frown on these positions as beneath them. Currently, only about eight percent of native Saudis work in the hospitality sector (Azhar, Duncan, & Edgar, 2014), with many positions occupied by expatriates. Historically, the service industry has also been viewed unfavorably by young Saudis due to the irregular work hours and comparatively low pay scale (Birchall, 2012).

As the hospitality sector grows, there is a major opportunity for women to contribute. Saudi women have now begun to outnumber men on university campuses within the Kingdom. Women now account for 51.8 percent of Saudi university students (*Gazette,* 2015). Although Saudi Arabian society has maintained a tradition whereby women are excluded from working outside of the household—the unemployment rate for women is 26.9 percent, four times the rate for men—it is possible that this could change. Already, of the working female population, 96 percent are employed in state teaching jobs (Allam, 2013).

Currently, Saudi women make up only 0.03 percent of the total people working in the hospitality sector (Azhar, Duncan, & Edgar, 2014). This is in stark contrast to other countries where the hospitality industry has seen significant growth of female workers. In 2004, in the United States, for example, women and minorities accounted for 57 percent of the hospitality workforce with women comrpising three-quarters of that number (Brownell & Walsh, 2008).

To capitalize on this gap in the market, some companies are already looking to train women in the hospitality industry. In 2016, Marriott International launched Tahseen, an 18-month hospitality program in conjunction with Cornell University. In the same year, AccorHotels launched its second management program in Saudi Arabia, allowing women to participate (Walsh, 2016). Major hurdles to encouraging women to pursue opportunities in hospitality are the local laws and traditions. This means that that customs regarding the interactions between male and females must be maintained. To accomplish this, efforts have focused on training women for non-guest facing roles such as finance, human resources and marketing (Walsh, 2016)

With the vast developments planned in the Kingdom, the need for sustainable development practices should be of the utmost importance. Saudi Arabia's position as a global leader in fossil fuel production and its rank as one of the highest oil consuming countries establish it as a major contributor to global climate change (Alshuwaikhat & Mohammed, 2017). With a dramatically sharp increase in tourism, Saudi Arabia's impact on global environmental issues should be monitored, evaluated, and adjusted appropriately.

Saudi Arabia is already one of the world's top per capita carbon dioxide (CO_2) producing countries, emitting 13.6 tons of CO_2 per person in 2009, which accounts for approximately 1.1 percent of global emissions despite representing ony

Figure 10. Saudi Arabia's Red Sea (Photo Credit: Red Sea Development Company).

Figure 11. Saudi Arabia's Red Sea (Photo Credit: Red Sea Development Company).

Figure 12. Renovation and expansion work in the Masjid Al-Haram in Mecca (Photo Credit: Ali Daye).

0.4 percent of the world's population (Hashmi, Abdulghaffar, & Edinat, 2015). Dramatic increases in foreign visitors will add to the country's current pollution issues as travel and tourism is considered the fifth largest pollution source, accounting for nearly 14 percent of greenhouse gas (GHG) emissions (El Hanandeh, 2013). Vast waste is already being produced as a byproduct of religious tourism. The 2011 hajj season generated 86,500 metric tons of solid waste (El Hanandeh, 2013). Any increases in activity in this area would exponentially increase the amount of waste produced, most of which is hauled to nearby landfills.

In terms of the new projects that have been announced, many of them will occupy previously undisturbed environs. Creating new infrastructure will be a major challenge as well. Large scale projects must also consider air quality, sustainable water resource planning, and sustainable energy planning. Much of this development would disturb Saudi Arabia's Red Sea coast.

Although Vision 2030 makes no mention of sustainable management of water and sanitation (Alshuwaikhat & Mohammed, 2017), some of the newly proposed tourism projects publicly seek to make a conscious effort towards sustainable environmental development. The current master plan for the Red Sea Development stipulates that energy be 100 percent produced by renewable resources. As Saudi Arabia continues to transform, it remains to be seen what sustainable measures will be implemented.

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The Hurdles To Financing Modular Development

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INTRODUCTION

Revenues from the permanent modular construction (PMC) sector jumped 62% in one year to reach $3.3 billion in 2016 and its quick growth has not gone unnoticed. The industry has attracted investment from sources such as Soft Bank's Vision Fund and Amazon's Alexa Fund, an indication of the perceived feasibility of modular building that is further illustrated in PMC's growing market share that increased 37% from 2014 to 2017 (Bousquin, 2019). Rising construction costs, tight labor markets, and an unprecedented demand for housing have pushed modular construction towards being one of the disruptors of an industry that has suffered a decline in productivity since the 1990's (Changlie, 2015). However, early adopters of modular still face hurdles, especially when searching for institutional sources of capital to finance their projects.

ROADBLOCKS OF FINANCING MODULAR DEVELOPMENT

Despite the growing momentum of the modular construction industry, institutional lenders have been slow to adapt to the needs of modular manufactures and developers. Three main financing hurdles have posed obstacles to developers looking to use modular construction. First, the traditional construction draw schedule, where funds are disbursed based on completion benchmarks, clashes with the off-site construction process where milestones are hard to gauge and do not necessarily translate into added collateral for a lender. Additionally, depending on the size, modular manufactures may require an up-front investment between $16 to $20 million to begin procurement and production (Stein, 2016).

The material and overhead costs associated with the procurement and production process can equal up to sixty percent of a module's cost and in many cases, manufacturers expect an upfront payment of fifty percent at the time the order is placed (Galant, 2017). To maximize the efficiency of factory assembly, manufacturers require almost all of the materials and parts within a very short period of time. Monitoring the progress and usage of materials when modules are simultaneously being assembled for different projects can be difficult especially when sixty to ninety percent of assembly occurs offsite. Furthermore, the large initial sum of capital required by manufacturers can strain bank reserves, and without any collateral or secured real estate would require an institutional lender to reserve a certain amount of money on their equity to avoid scrutiny from regulators (Mahr, 2018).

During production, modules are personal property of the manufacturer and do not become real property until they are delivered and set onsite. As a result, many banks will only release construction financing after the modules are delivered and installed to ensure their disbursement goes towards real property that they can perfect a lien on (Maher, 2018). Alternatively, manufacturers typically want payment prior to delivery to avoid the conversion from personal to private property that can lead to a significant legal complication to a manufacturer's recourse if there are future payment disputes (Cameron, Carlo 2007). These differences in expectations further complicate the disbursement of funds and overall financing structure.

The second financial hurdle facing modular construction developers arises from the immaturity of their industry, wherein a lack of precedent leads to uncertainty in pricing and scheduling, and results in inconsistencies in the burden and risks. While the use of modular construction continues to increase overall, there is an absence of completed projects which make determining the finished value of a project during the appraisal and underwriting process difficult. As a result, this can cause the bank's valuation of the project to be skewed unfavorably and in turn increases financing costs for developers.

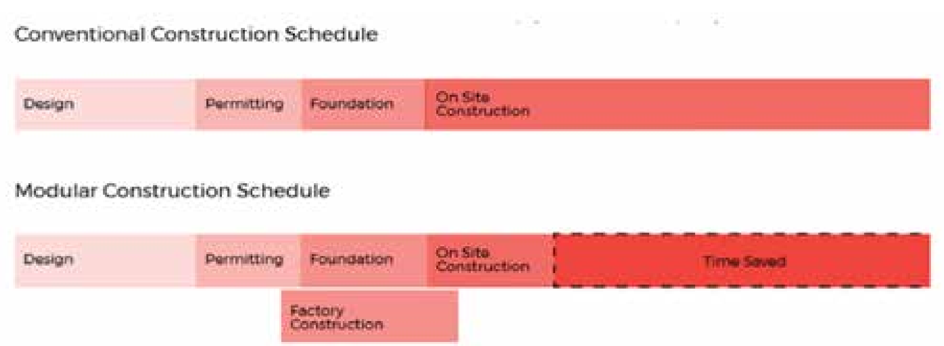

Figure 1. Comparative productivity between manufacturing and construction. Source: Changali, S., Mohammad, A., & Nieuwland, M. V. (2015, July). The Construction Productivity Imperative. Retrieved January 10, 2018, from https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/the-construction-productivity-imperative).

Because only a small group of U.S. companies are capable of high-rise modular construction, lenders are concerned about project completion if a manufacturer becomes insolvent (Sri, 2012). The lack of proven manufacturers undermines completion guarantees and directs the focus of lenders on the quality and experience of the sponsor increasing the importance of quality social underwriting. Under this scenario lenders may require additional interest reserves and or contingency funds to satisfy any uncertainty in the project. Additionally, the immature market has made manufacture pricing notoriously unreliable. As a result, cost can be ambiguous, especially when suppliers underperform causing some developers to look oversees to source modules from more experienced manufacturers.

Lastly, during the modular assembly process, progress is hard to monitor in a factory setting where modules may be assembled for multiple projects simultaneously. This makes determining the allocation of materials especially difficult within the context of identifying collateral to securitize a loan. Typically, during the early stages of the manufacturing process, all collateral is owned by the manufacture leaving most modular projects to be unsecured. At this point the only secured collateral a developer has is a piece of raw land, the value of which does not increase until modules are set in place. From a lender's perspective the increased risk associated with this process is hard to stomach and can make securing funding of modular development much more difficult than would be the case in traditional development projects.

WHY FINANCING MODULAR PROJECTS IS IMPORTANT

ULI's "2019 Emerging Trends" publication cited construction technology as being the most important potential disruptor of the real estate development industry, with specific reference to offsite building (Kelly, Warren, Kramer, 2019). In a development environment where construction prices continue to increase along with demand for new housing, finding ways to lower costs and reduce project schedules is imperative. Furthermore, the real estate industry has become increasingly proactive on sustainability issues as the value of green building becomes more tangible. The U.S. housing shortage, rising construction costs and emphasis on green building act as the three main drivers of demand for the use of modular construction and underline the importance of improving the avenues of financing for such projects.

To meet the rising need for housing, an estimated 4.3 million apartment units will need to be constructed by 2030, although meeting the demand for low income and workforce housing will be especially difficult given the decline in building productivity coupled with rising acquisition costs in high demand locations (Bibby, 2017). Cities such as San Francisco are scrambling to house teachers, firefighters and police officers who no longer are able to afford local housing. Within this context, finding alternative building methods that lower project costs and shorten construction schedules has become imperative.

The speed, efficiency and cost saving qualities of modular construction make it one of the primary ways to address such issues. Containing the majority of assembly within a factory environment has proven to reduce waste and decrease building timelines and in turn reduces overall project costs. While the per unit material costs predominantly remain the

Figure 2. Real estate disruptors. Source: Emerging Trends in Real Estate 2019 Survey.

same in comparison to traditional construction, labor costs differ dramatically, especially in locations where union labor prevails (Stein, 2016). While it is important to note that, within the context of affordable housing, the Davis-Bacon Act only applies for on-site construction, even in instances where union labor is utilized by manufactures, wages are lower for manufacturing workers than on-site construction workers. On average, modular adopters have seen at least a sixteen percent decrease in building costs in part due to the lower cost of labor involved in modular construction compared to that of their on-site counterparts (Stein, 2016).

One of the greatest benefits of modular building is that it dramatically reduces the time required for construction. The Modular Building Institute estimates that modular projects have 30% to 50% time savings when compared to traditionally structured projects (Stein, 2016). Decreasing project schedules has become especially important, due to labor shortages the average multifamily project is delayed five months (Anderson, 2019), however the time-saving benefits of modular construction cannot be realized when the industry is relatively young and both investors and developers face uncertainty when taking on new projects. Therefore, for faster construction times and other benefits to be realized, modular construction must be utilized more frequently to capitalize on its economy of scale allowing precedent to be set and in turn, incentivize the expansion and growth of the industry.

The modular building process also greatly reduces the amount of waste produced in comparison to traditional building methods. Manufacturers, in most cases, have implemented lean manufacturing methods originally developed by Toyota that are automated with the assistance of Building Information Modeling. Over all, waste reduction is reduced to 10 to 15% on average with some manufactures accomplishing only 1% waste (Edmonds, Golden, Mckenna, 2018). In comparison, the American Institute of Architects attributes building-related material was make up anywhere between 25% to 40% of the U.S. solid-waste stream (Dillow, 2016). Increasing the number of modular projects will inherently reduce waste.

SOLUTIONS MOVING FORWARD

To help ameliorate the issues articulated above, lenders must become comfortable with deviating from the traditional structure of their construction loans. In order to do so, new methods of tracking assembly progress and material usage must be implemented to mitigate concerns over the lack of collateral and ability to conduct oversight of the building process. This is especially important in factories with more than one PMC product line and the capacity to produce modules for multiple developments simultaneously making the allocation of project specific materials difficult to track. Additionally, developing relationships with sponsors and manufacturers is also important to improving lenders

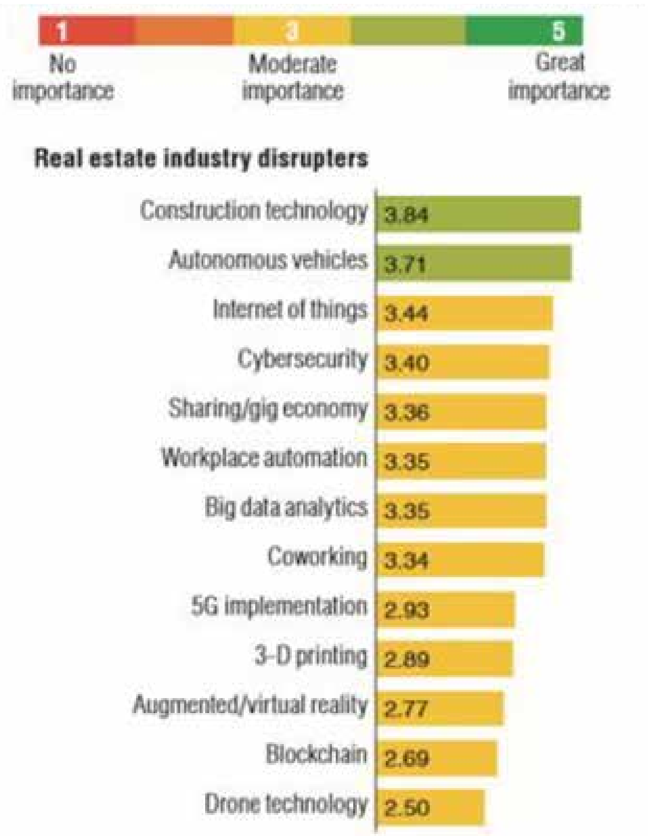

Figure 3. Modular construction schedule. Source: WSP, 2018 Modular Construction for Multifamily Affordable Housing.

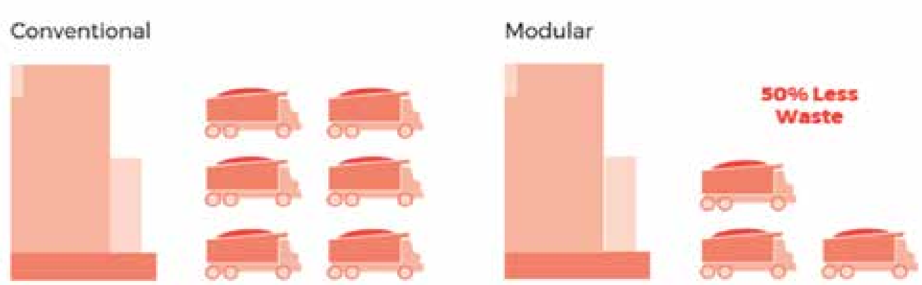

Figure 4. Reduction in Waste. Source: WSP, 2018 Modular Construction for Multifamily Affordable Housing.

social underwriting process and mitigate the risk associated with implementing new construction processes.

Lenders, have utilized a variety of methods in an effort to improve their oversite of material usage and assembly. Most notably, digital tracking systems such as RFID have been developed to monitor manufacturers' material flows and allocation. As a result, lenders are able to increase their exposure to the off-site building process while minimizing decreasing risk (Edmonds, Golden, Mckenna, 2018). Identifying project specific materials in a factory also allows lenders to take a collateral or security interest in those materials (Galante, Draper-Zivetz, Stein, 2017).

Lenders have also utilized live video monitoring systems in addition to deploying site inspectors to assess work progress and determine percent completion. In doing so, lenders are able to better assess percent completion and a manufacturer's adherence to a project's schedule. This allows lenders to approve construction in process and provides greater control over administering construction loans.

Developing strong relationships with modular manufactures to develop a better understanding of their manufacturing techniques and use of capital has also proved beneficial for lenders such as Avana Capital. Establishing such relationship allows lenders to better asses a factory's overall capitalization and financial stability. Furthermore, it provides a way to better determine if a manufactures business model is sustainable. This allows more informed social underwriting. Ideally, lenders receive a form of completion and repayment guarantee from manufactures that are separate from the developer.

CONCLUSION

Modular construction is an antidote to many of the prevailing issues that plague the current development environment in the U.S. With building costs increasing and a scarcity of skilled labor, construction has become one of the leading frontiers for innovation (Mahr, 2018). The large sums of capital being invested in vertically integrated firms such as Katerra and RadUrban make the future of modular look promising. Now, one of the last pieces of the puzzle to the success of modular construction is for institutional lenders to become comfortable with deviating from their traditional lending habits. By doing so, everyone benefits? And the risks are minimized . . .

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