

The Viability of the “Build-to-Rent” Single-Family Model in Tertiary Markets

by

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Submitted to the Program in Real Estate Development in Conjunction with the Center for Real Estate in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

at the

Massachusetts Institute of Technology

September, 2019

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ABSTRACT

This thesis examines an emerging product type, single-family build-to-rent, and tests its potential application in tertiary markets of the United States. The build-to-rent (“BTR”) model has proven successful in a number of fast-growing secondary markets, such as Phoenix. However, the attributes of these markets differ widely from tertiary markets. This paper examines the key drivers in Phoenix, such as demographics, land costs, construction costs, cap rates and rents that have made this product successful and compares these metrics against those of tertiary markets in an effort to evaluate whether single-family BTR is a viable product type in those markets.

Case studies are used to compare secondary markets to tertiary markets. Oklahoma City, Tucson and Fresno are selected as the tertiary markets based on their varying affordability scores as measured by the Housing Opportunity Index. This index was chosen to test whether homeownership affordability predicts BTR success. While there are different varieties of BTR products, these case studies examine a hypothetical 20-acre project of 160 single-family detached homes of approximately 1,800 square feet each.

Untrended Returns on Cost (“ROC”) were found to be similar to Phoenix in Oklahoma City and Tucson. However, due to the slower rent growth and higher cap rates of these tertiary markets, Internal Rates of Return and Equity Multiples were found to be too low to justify this specific BTR design. However, further institutionalization of this asset class and a reevaluation of the pricing of SFR volatility has the potential to lower cap rates to a level that justifies the BTR product in tertiary markets.

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1 Purpose

This thesis examines an emerging product type, single-family build-to-rent, and tests its potential application in tertiary markets of the United States. The build-to-rent (“BTR”) model has proven successful in a number of fast-growing secondary markets, such as Phoenix. However, the attributes of these markets differ widely from tertiary markets. This paper examines the key drivers in Phoenix, such as demographics, land costs, construction costs, cap rates and rents that have made this product successful and compares these metrics against those of tertiary markets in an effort to evaluate whether the single-family BTR is a viable product type in those markets.

The examination begins in Chapter 2, with a 30,000-foot view of the single-family rental market (“SFR”) – its history, market share and its value proposition relative to multifamily and single-family ownership. Next, the history of SFR is documented, recounting its growth since the Great Recession, why its growth is expected to continue and how and why this asset class is becoming institutionalized. In Chapter 3, single-family build-to-rent, the progeny of the broader SFR market, is defined and its competitive advantage relative to multifamily, single-family ownership and traditional, geographically dispersed SFR is explored.

Chapter 4 dives deeper by deconstructing the market attributes that have led to explosive SFR growth in Phoenix. Diving even deeper, Higley Park in Gilbert, a single-family BTR project twenty-eight miles from downtown Phoenix, serves as a case study. Armed with knowledge and metrics for a successful single-family BTR market and project, Chapters 5 through 7 test three case studies in tertiary markets with a hypothetical single-family BTR development. Finally, based on these case studies and the quantitative research, conclusions are drawn about the viability of single-family BTR in tertiary markets.

2 Single-Family Rental Market

This chapter reviews the history of the single-family rental market (“SFR”), its current market share and the macro forces fueling growth in this asset class.

2.1 Overview of Single-Family Rental

Single-family rentals compete in the housing market primarily with multifamily apartments and single-family ownership. The primary distinction of SFR with ownership is the down payment, maintenance & repairs and lack of flexibility. The distinctions with apartments are multifold. One, tenants get more space and bedrooms at a lower cost per square foot. Two, SFR are more likely to be located in high quality school districts [1, p. 6]. And three, these units offer greater privacy, yard space, closer parking (and often attached garages), less noise and more storage space [2, p. 8]. However, maintenance for yard work falls on the tenant and there are generally fewer amenities

than an apartment complex. In general, the data shows households with growing families prefer the space, privacy and school quality of suburban living [3].

Figure 1: Factors that Influence Rental Housing Choice.

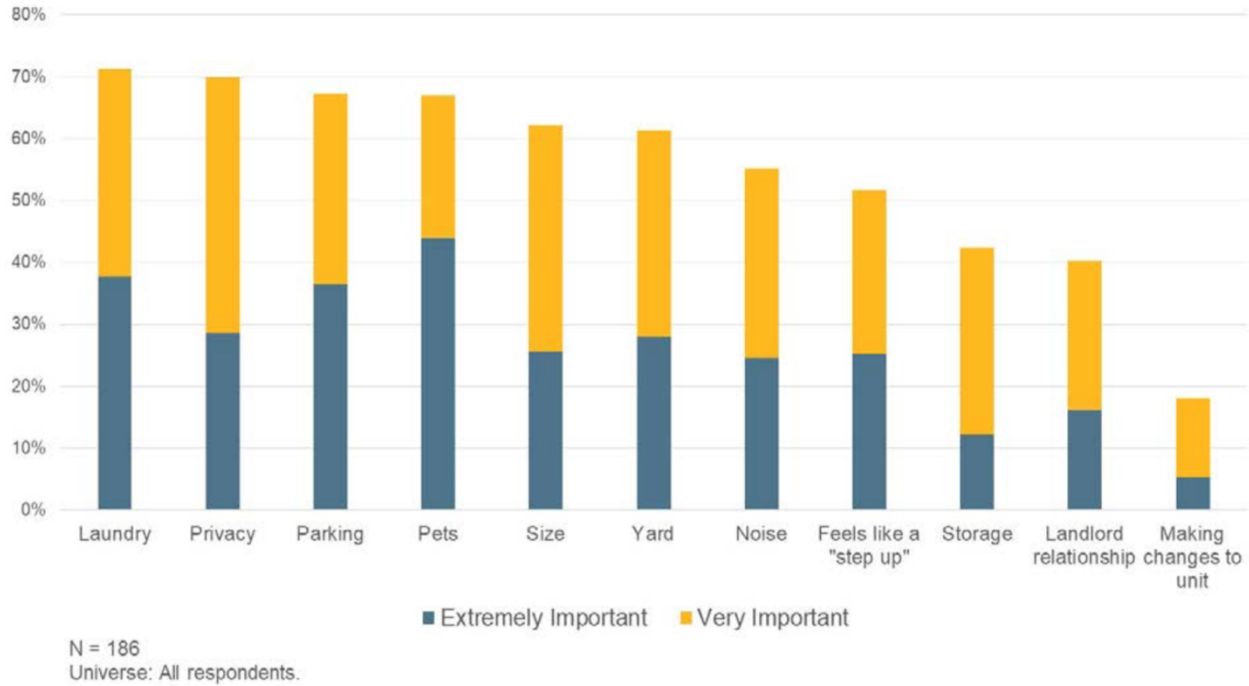
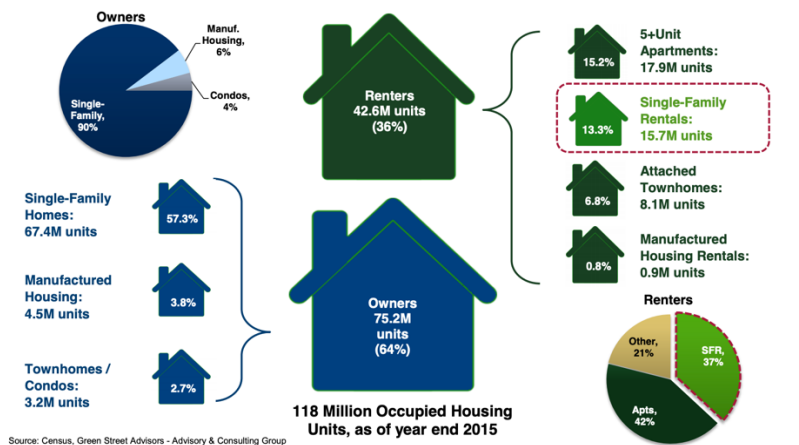


Figure 2: Single-Family Rental's Position in the U.S. Housing Market.



Single-family home ownership has long been viewed as a part of the American Dream. In fact, the bulk of housing in the US is single-family owned (57.4% or 67.4 million units) [1, p. 7]. From 1965 to 2019 the homeownership rate in the US has averaged 65.23%, with a low of 62.90% in 1965 and a high of 69.20% in 2004. As of 2018, 64.40% of American households owned their homes, a figure that is 0.84 percentage points below the historic mean [4]. As home prices have risen to within 7.6% of their 2006 peak, income gains have failed to keep pace, worsening

affordability [5, p. 13]. Additionally, new home starts have barely kept pace or actually trailed household formation, an historic anomaly [6, p. 3]. New single-family home starts for entry level-buyers as particularly depressed. Consequently, the homeownership rate appears to have stalled after climbing only 50 basis points in 2018.

Robert Murray, chief economist at Dodge Data and Analytics on June 21st, 2019 [7].

“Over the last year, single-family housing construction seems to have been stalled, probably due to affordability concerns. The first-time homebuyers have not entered the market to the same extent we have seen in prior cyclical upturns.”

Figure 3: Home Ownership Rates Peaked, Fell and are Near the Historic Average.

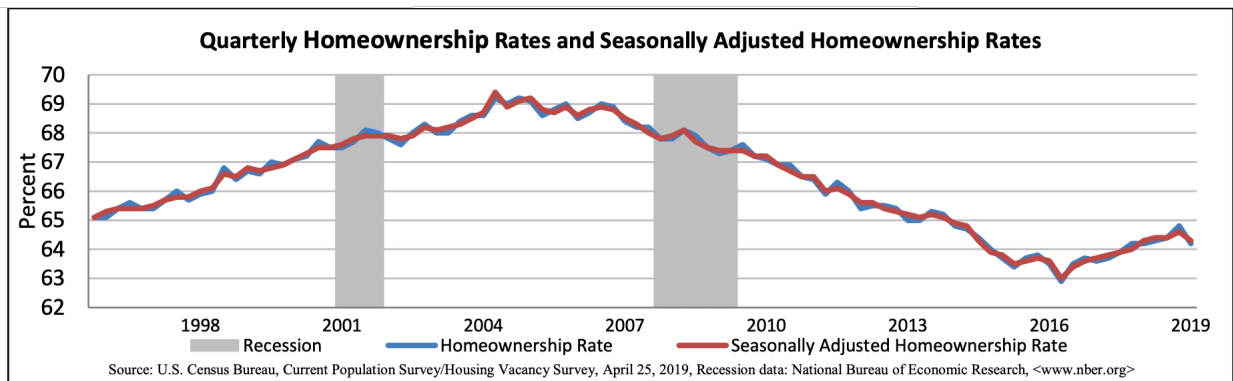
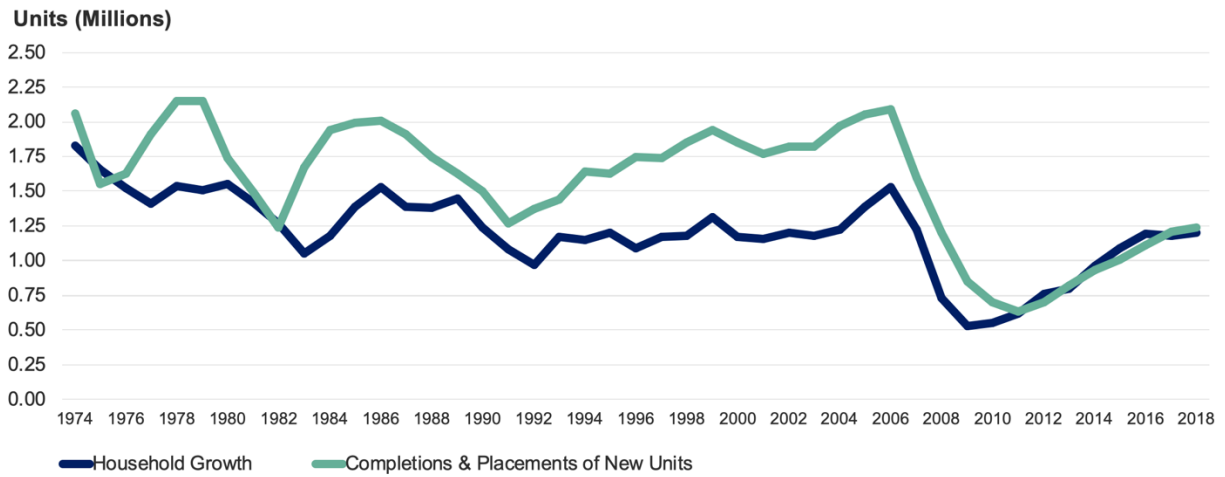
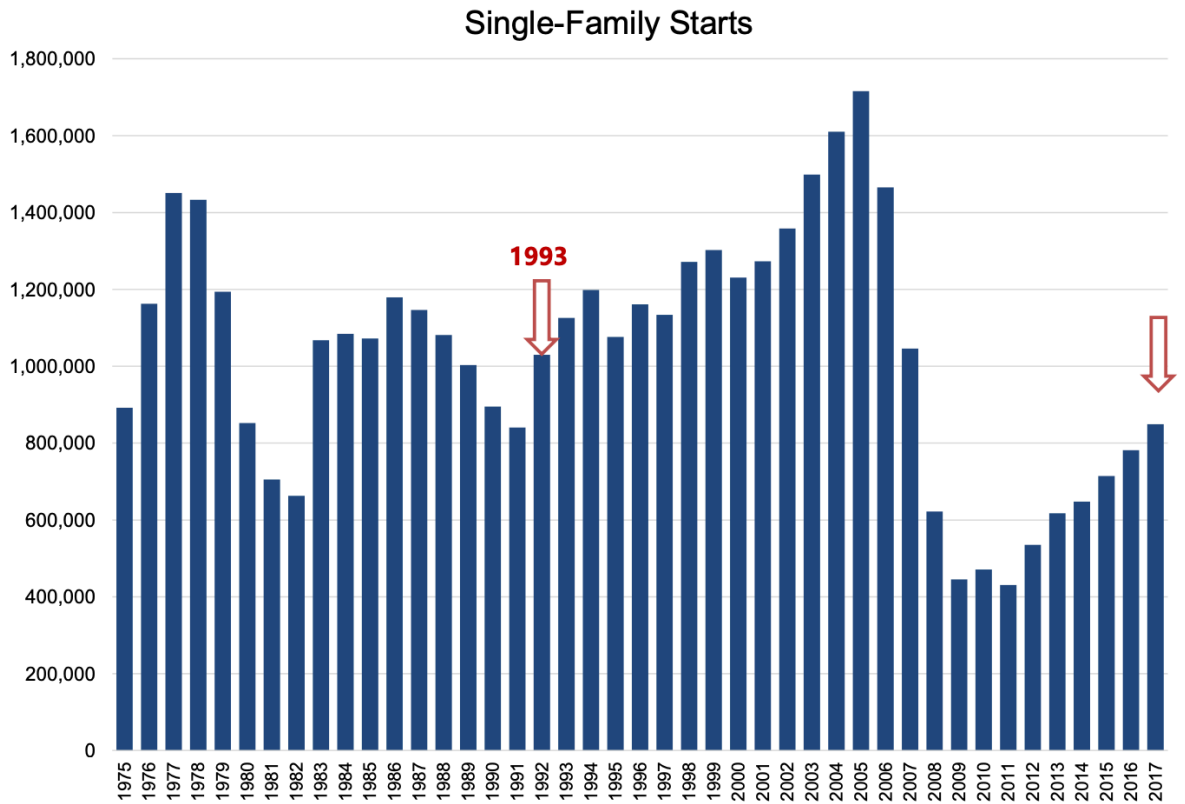


Figure 4: New Housing Starts are at an Historic Low Compared to Household Formation Rates.



Notes: Household growth data are three-year trailing averages. Placements refers to newly built mobile homes placed for residential use. Source: JCHS tabulations of US Census Bureau Housing Vacancy Survey, New Residential Construction data.

Figure 5: Single-Family Starts are Particularly Below Average [8, p. 30].



Macroeconomic and demographic trends challenge the assumption that homeownership levels and attitudes will return to the 2004 peak. Against this backdrop of macro trends and challenging economic circumstances, particularly for first-time buyers, the renter class has soared. Nowhere has this been more evident than in single-family rental units. According to the Turner Center at the University of California, Berkley, “Between 2006 and 2016, more than 3.8 million additional households became renters of single-family homes.” While rental multifamily units also gained during this period, the SFR share of all rentals increased from 31% to 35% during this period [2].

During the Great Recession, the housing bust and economic recession left many homeowners underwater on their mortgages and/or unable to make their payments. Banks foreclosed and investors acquired millions of homes and converted them into rental units. While this confluence of economic forces led to an unplanned surge in SFR, other demographic and preference related factors favor planned, organized and institutionalized SFR growth over the coming decades. In the next section, these trends are explored in greater depth.

Figure 6: Growth in Single-Family Rentals.

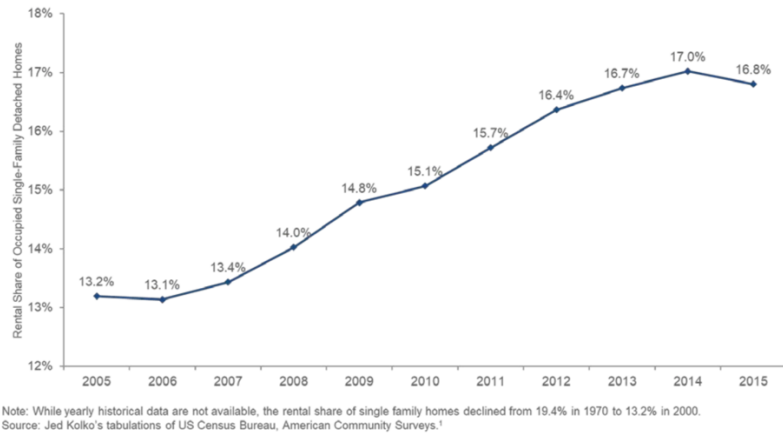
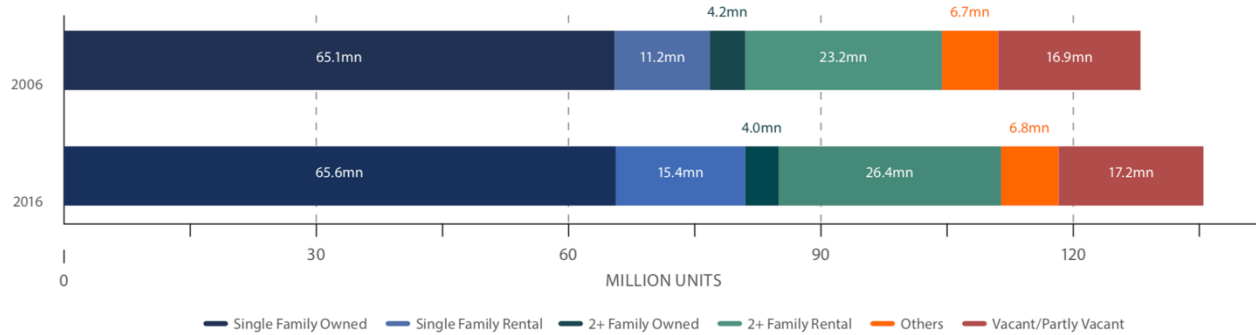


Figure 7: U.S. Occupied Housing Stock – by Owner/Rentals & Units in Structure.



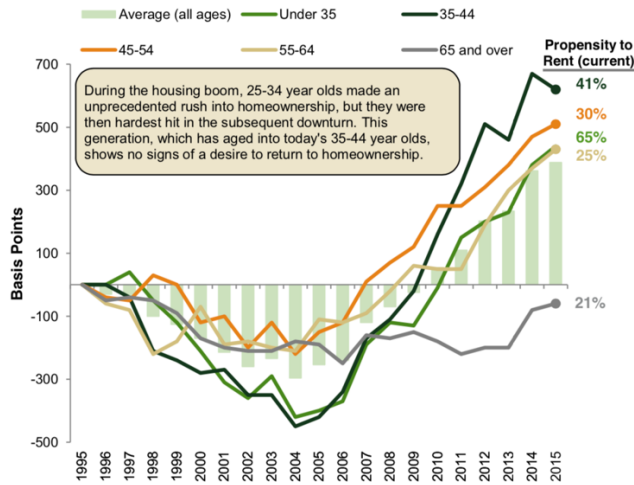
2.2 Demand Factors for SFR

A household’s decision between 1) renting and owning and 2) single-family and multifamily is dependent on the household’s financial situation and lifestyle needs [1, p. 13]. Stated simply, needs for space and home buying affordability constraints favor SFR.

2.2.1 Propensity to Rent

Every generation is showing a higher propensity to rent than the long-term average, but this is most pronounced among the younger cohorts. It should be noted, however, that propensity for renting does not necessarily mean preference for renting. In fact, a survey among single-family renters indicated that 80% wanted to own a home and wanted to make that transition within five years [2, p. 11]. However, as will be explored below, these non-homeowners may not have the financial ability to purchase a home.

Figure 8: Cumulative Change in the Propensity to Rent.

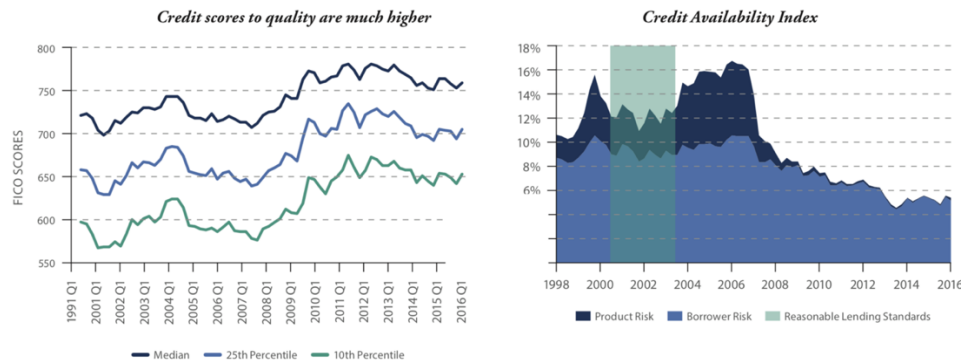


Source: Bureau of Labor Statistics, U.S. Census Bureau, and Green Street Advisors - Advisory & Consul

2.2.2 Access to Credit:

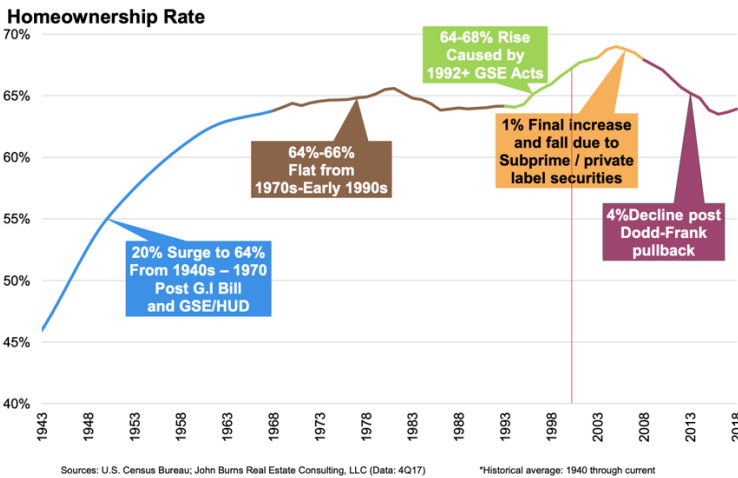
Access to credit is essential for making the transition to homeownership. However, in today's climate, credit remains tight, even compared to the "reasonable" years of the late 1990's. Mortgage delinquency rates are near record lows [9]. Historically, this has tempted banks to loosen standards and grow revenue, but this does not appear to have happened to any meaningful degree. The Dodd-Frank Wall Street Reform and Consumer Protection Act is often cited as a reason for the stricter lending standards. These regulations were loosened in 2018, but the impact on credit availability remains to be seen. Meanwhile, discussion in Washington about privatizing Freddie Mac and Fannie Mae and altering their role in the secondary mortgage market poses a risk to the cost and availability of capital to homebuyers. On balance, the future of credit availability and cost is uncertain – while interest rates have been at historically low levels, indicating most of the risk to interest rates appears to be to the upside, political developments could further hamper or alternatively, help credit availability. To the extent interest rates are rising and credit remains tight for homebuyers, renting will benefit.

Figure 9: Credit Scores to Qualify are Higher and Credit Availability Index is Lower.



Source: Urban Institute based on eMBS, CoreLogic, HMDA, and Inside Mortgage Finance Data as of Q1 2016
 Note: Product risk refers to the amount of mortgage credit risk taken by the market that is attributable to certain risky mortgage products (like shorter reset hybrids). The rest of the mortgage credit risk taken by the market is classified as borrower risk. See Measuring Mortgage Credit Availability Using Ex-Ante Probability of Default for more details.

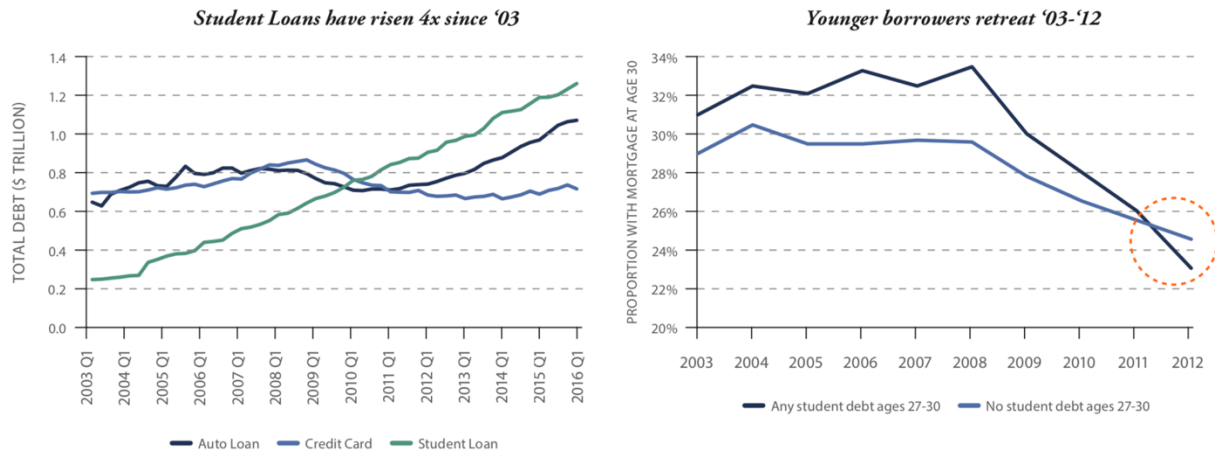
Figure 10: Government Legislation is Correlated with Change in Homeownership Levels.



2.2.3 Student Debt

Student debt has increased significantly, especially since the early 2000's. Not surprisingly, a University of Michigan and Zillow study found that homeownership drops as student loan debt increases [10, p. 26]. Going forward, students will continue to incur debt as the income premium for earning a college education is at a record high compared to high-school graduates [11]. This makes it increasingly difficult for first-time homebuyers to afford a down payment.

Figure 11: Student Loan Debt Has Increased and Younger Borrowers Retreat from Homebuying.

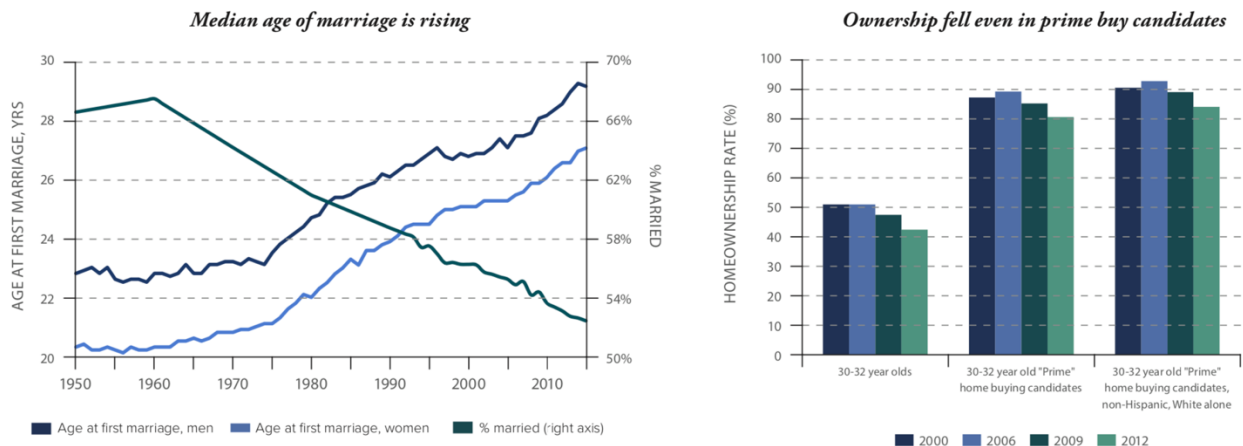


Source: Left chart: Federal Reserve Board FRBNY Consumer Credit Panel/Equifax as of 2016 Q2.
 Right chart: Student Debt Overview last published in 2012

2.2.4 Stage of Life

Changes in housing preferences are correlated to changes in life stage. As major life stages such as marriage are delayed, households remain renters for longer. Home ownership rates have even fallen for those considered as “prime buying candidates”, which is defined as being upper-income, having a college education and being married with children [10, p. 23]. These trends bode well for rentals in general.

Figure 12: Median Age of Marriage is Rising and Ownership Falls Even for Prime Candidates.



Source: Left chart: U.S. Census Bureau, Current Population Survey, annual supplemental data as of March 2016

Right chart: Fannie Mae Economic and Strategic Research, “Housing Insights” brief volume 4, Issue 4, Aug 18 2014

Note: Prime home buying candidates are defined as upper-income households (top quartile) with householders in their early 30s who have college educations and are married with children.

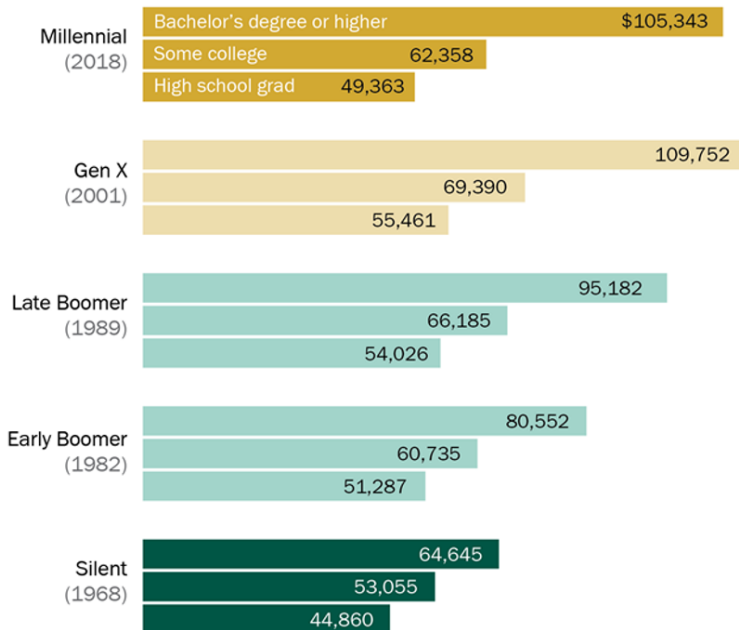
2.2.5 Income Inequality

As mentioned before, the gap between those with bachelor’s degrees or higher and those without has grown wider. While those households without a college education would presumably be less likely to be burdened by student debt, the decrease in earnings is significant. Of course, homeownership is not out of reach for the most financially successful millennials, but as inequality widens and the cost of housing has increased, homeownership is increasingly unaffordable to a growing segment of Americans. This is a positive for renting, and particularly SFR as these households start families.

Figure 13: Education Gaps Lead to Household Income Gaps [12].

For Millennials and Gen Xers, large education gaps in typical household income

Median adjusted household income of households headed by 25- to 37-year-olds, in 2017 dollars



Note: Household incomes are adjusted for household size. “High school graduate” includes those who have a high school diploma or its equivalent, such as a GED certificate. “Some college” includes those with an associate degree and those who attended college but did not obtain a degree. The educational attainment question was changed in 1992. For Boomers and Silents, “high school graduate” includes those who completed 12th grade (regardless of diploma status) and “bachelor’s degree or higher” includes those who completed at least four years of college (regardless of degree status).

Source: Pew Research Center analysis of 1968, 1982, 1989, 2001 and 2018 Current Population Survey Annual Social and Economic Supplements (IPUMS).

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2.2.6 Growing Families

Growing families most often feel the need for more space. If these families are unable to afford to purchase a home, these “forced renters” will most likely rent single-family units. Only 11% of apartment units offer 3 bedrooms or more compared to 65% of SFR. Furthermore, these growing families will seek other qualitative aspects such as neighborhood safety and better schools that are traditionally found in single-family, suburban neighborhoods [10, p. 30].

Matt Blank, Partner of BB Living [13]:

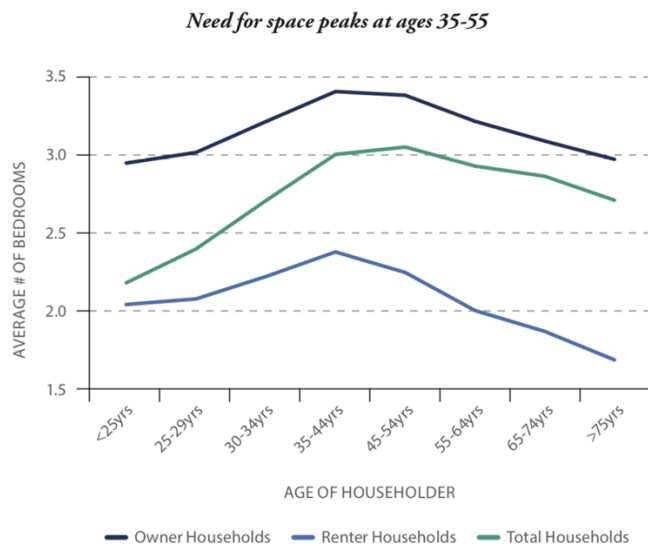
“The average renter is a couple in their late 30’s with two children and an annual income of \$80,000 to \$110,000. With that, they have enough cash flow to pay the monthly rent on a single-family home.”

“We think we have a really symbiotic relationship with multifamily. We think people are going to grow out of multifamily—there’s a whole cohort of people who want to be renters, but they can’t live in a one- to two-bedroom multifamily unit because they need more space, and there are very few three-bedroom units out there,” says BB Living’s Blank. “That’s where our communities come in. The millennial generation is growing up and having kids, and as they move out of multifamily, we have product for them to move into—bigger units.”

Robert Dietz, Chief Economist at the National Association of Home Builders [13]:

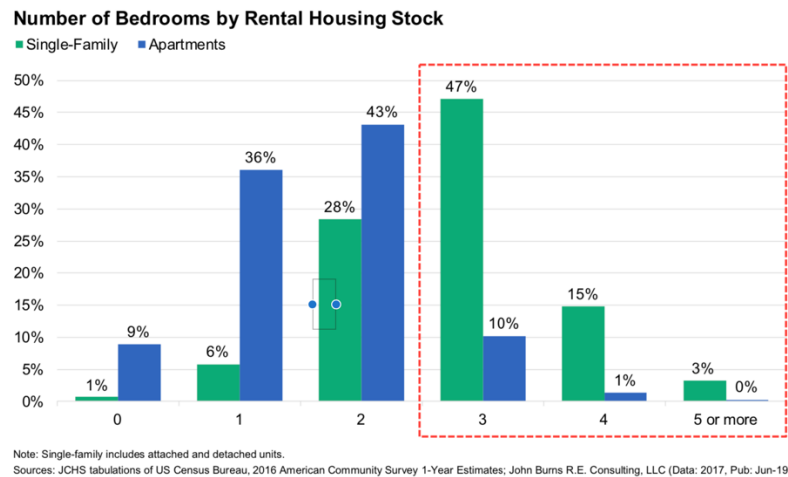
“Single-family rentals are driven by this demographic wave that’s the new part of housing demand, which is the millennials moving from their 20s to their 30s. You have to think about the kind of household that’s going to be moving from a multifamily unit, and wants to move based on structure type, but may not have the means to complete a sale.”

Figure 14: Need for Space by Age.



Source: Amherst Capital estimates based on U.S. Census data from the American Housing Survey as of 2013, published in 2015.

Figure 15: Apartments are Predominantly 1 and 2-bedrooms.



2.3 Institutionalization of the SFR Asset Class

While other asset classes have already become institutionalized, SFR had historically remained the domain of the mom-and-pop investors because these units are geographically dispersed, require micro-level market knowledge and are management intensive. However, the Great Recession paved the way for the institutionalization of this asset class and the year 2012 was the inflection point. During this year, Invitation Homes (“INVH”) secured a \$1.5 billion commitment from Blackstone and Warren Buffett separately opined on the opportunity in single-family rentals.

Warren Buffett, February 27th 2012 [14]:

“If I had a way of buying a couple hundred thousand single-family homes and had a way of managing—the management is enormous—is really the problem because they’re one by one. They’re not like apartment houses. So – but I would load up on them...”

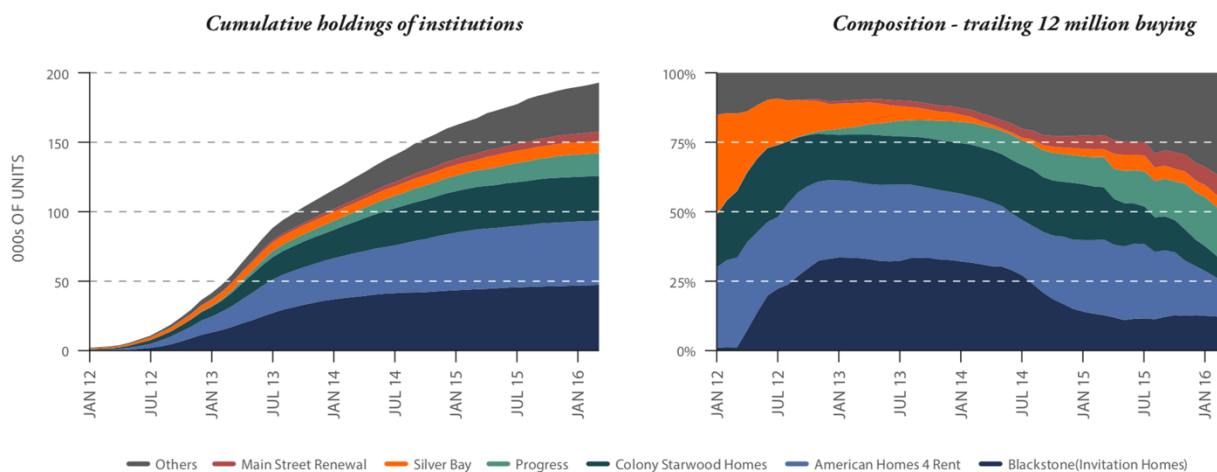
Brad Greiwe, co-founder of Invitation Homes, a \$14 billion market-cap SFR REIT [15] explains:

“Our success in no small way owes itself to the institutionalization of multi-family housing in the early 1990s. Prior to this time, the vast majority of apartment buildings in the U.S. were owned by “mom & pop” outfits. When the real estate market collapsed in 1989, institutional capital flooded the market, aggregating large pools of distressed apartment stock from the Resolution Trust Corporation, which the federal government had created to mop up the real estate mess left from the savings-and-loan debacle. With sophisticated and well-funded ownership groups, professionally managed apartment properties became ubiquitous, and one could secure 24-hour a day service and a superintendent at your door at the drop of a hat. Knowing full well that history tends to repeat itself, and in the throes of a similar real estate crisis, we were left asking ourselves: “why couldn’t we do that with single-family housing?”

By the 1st quarter of 2019, the four largest public single-family rental REITs had amassed a combined portfolio of 164k units. These REITs in order of size are Invitation Homes (“INVH”) with 80,400 units, American Homes 4 Rent (“AMH”) with 51,500 units, Tricon American Homes

(“TAH”) with 18,100 units and Front Yard Residential Corp (“RESI”) with 14,500 units. While these companies are only a sliver of the single-family rental market, they demonstrate the growing institutionalization of this asset class [16].

Figure 16: Top Public Single-Family Rental REITs Have Grown Dramatically.



Source: Amherst InsightLabs estimates, based on CoreLogic county record and transaction data as of Q1 2016

The institutionalization of an asset class represents 1) cheaper cost of capital and 2) increased sophistication. Private firms often go public to access a wider swath of investors in order to lower their cost of capital. Public real estate investment trusts (REITs) are no different. A recent transaction by Invitation Homes illustrates how scale and sophistication can lower capital costs. In 2017, Fannie Mae guaranteed up to \$1 billion in Invitation Homes debt. Government guarantees lower the cost of capital. Theoretically, cheaper capital costs will help SFR operators lower rents and compete in the market for tenants.

Ryan Dezember of the Wall Street Journal summarizes the effects of the transaction [17]:

“For Fannie and its smaller government-controlled peer, Freddie Mac, the expansion into the nascent single-family rental market shows both the potential for the companies to expand their role in a changing housing market and, in the process, to institutionalize new investment classes. Both companies have long provided funding to the apartment sector, including luxury rental buildings owned by publicly traded real-estate investment trusts and other institutional owners.”

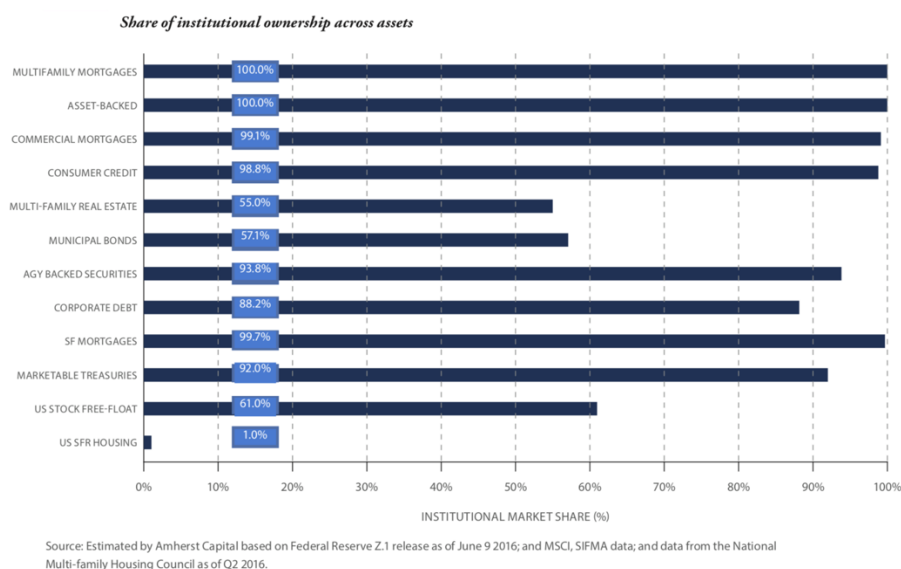
The second benefit of institutionalization is that may increase the quality of the experience. Sophisticated firms with access to data can identify best practices and streamline processes of renting a single-family home, as has already happened in multifamily. For example, rather than calling your mom-and-pop landlord, who may be out of town when the water heater breaks, you call a 24-hour answering service. The larger firm’s scale offers tremendous leverage with local contractors, ensuring prompt, reliable and cheaper repairs than a mom-and-pop investor may be able to offer.

Brad Greiwe, co-founder of Invitation Homes, elaborated on IH’s competitive advantage [15]:

IH’s distinct tech stack allowed us to scale teams across markets exceptionally quickly, enabling us to responsibly purchase and effectively manage thousands of quality homes for rent. We innovated at each phase of a single-family rental home’s lifecycle, which became part of our clear competitive advantage. Some of these unique mobile enabled innovations include: underwriting & bidding software; contractor & vendor management tools; rehab budget tracking & inspection software; customized workflow management & communication tools across different business functions; intelligent maintenance routing; scheduling & reporting tools; easy online payment system; advanced BI analytics platform; and numerous API integrations, to name a few.”

While institutional players have significantly increased their market share in SFR, it must be noted that their share is still only 1% to 2%. This compares to institutional ownership of 50% - 55% in multifamily housing [10, p. 12]. Nevertheless, John Pawlowski from Green Street Advisors, believes institutional money will continue to flow into single-family rental because of its favorable returns relative to other real estate asset classes [18]. Additionally, the returns are even more favorable on a risk-adjusted basis [10, p. 30].

Figure 17: Percent of Asset Class Institutionalized



3 Build-to-Rent Single-Family Communities

In the chapters above, the demographic, economic and preference trends that are fueling growth in SFR were identified. It was shown that that this asset class is gaining legitimacy among institutional investors, which is lowering the cost of capital and providing liquidity for portfolios of SFR assets. Now, single-family build-to-rent, under the wider umbrella of single-family rental, is defined.

3.1 Overview of Build-to-Rent Single-Family Communities

There is a variety of BTR products. John Burns Real Estate Consulting surveyed 210 properties and identified four general categories. This paper focuses on single-family detached homes on traditional lots because the denser options are generally attached and are therefore not as novel and the fourth category for luxury single-family is not as prevalent.

Figure 18: Spectrum of Build-to-Rent [19].

Product Category	Typical Home Size Range		Typical Density (DU/Acre)
	Smallest	Largest	
“Cottage Homes” Small single-family detached and attached homes	650 sq. ft. 1 bd/1 ba	1,400 sq. ft. 3 bd/2 ba	12
Townhome and Duplex homes in two- to seven-unit building configurations	1,300 sq. ft. 2 bd/2 ba	1,750 sq. ft. 4 bd/2.5 ba	10
Traditional Single-Family detached homes on traditional lots	1,400 sq. ft. 3 bd/2 ba	2,000 sq. ft. 4 bd/3 ba	8
Luxury Single-Family detached homes on traditional lots	2,000 sq. ft. 3 bd/3 ba	2,800 sq. ft. 4 bd/3.5 ba	6

The John Burns survey identified several key features consistently found in BTR projects. There is a notable emphasis on durable and low-maintenance products, such as faux wood floors and granite kitchen tops. Unit square footage is a significant differentiator compared to multifamily and most units have a yard, even if it is small. Ceilings are 9-feet high and because there are no party walls, windows can be placed on all four walls. In contrast, apartment ceilings are often 8-foot high and the double-loaded corridors allow windows on only one wall [19].

Figure 19: Survey of 50 Communities [19].

Amenity Description	Percentage Offering	Amenity Description	Percentage Offering
Laminate or tile/faux wood flooring	100%	Pool	81%
9'+ ceiling heights	92%	Gated entrance	76%
Private fenced yard with backyard patio	90%	Walking trails	70%
Granite counters and stainless steel appliances in kitchen	89%	On-site maintenance	69%
Full size washer and dryer included	80%	Spa	67%
Island in kitchen	63%	Dog park	31%
Walk-in closet in master bedroom	42%	Parks	26%
Carpet in bedrooms	38%	Clubhouse	23%
Dual vanities in master	37%	Fitness center	22%
Front porch	27%	Car charging station	12%
Separate tub and shower in master bath	19%		
Fireplace	0%		

See Appendix II for pictures of Higley Park, a built-to-rent community in Phoenix, AZ.

Generally speaking, single-family BTR homes are newer and specifically designed for renters. Because they are new and concentrated in a single neighborhood with identical fixtures and construction methods, operating expenses are lower and capital expenses are much lower in the early years [20]. Developers of this upscale category of BTR target high-growth cities with safe neighborhoods that offer good schools.

While the rental cost per square foot is lower, the square footage of the unit is greater. Consequently, gross rents are higher. In total, this product meets the demographics and preferences identified in Chapter 2 – growing families that prefer the flexibility of renting or who can afford the monthly payments, but cannot afford a down payment.

Mark Wolf, CEO of AHV Communities [21]:

“We’re like a country club or apartment environment, where you have a community that has a social component to it as the centerpiece. The dog park, the fitness center, the pools, the clubhouse with the maintenance and management team daily. That’s the difference.”

3.2 Entitlements

Entitlements for single-family BTR projects may be difficult to achieve if the public views the units as low-value properties that will generate low tax revenue relative to their 3-bedroom, family-oriented design. For example, down-zoning a parcel from multifamily may be viewed by the public favorably due to the lighter density, but unfavorably if it is viewed as adding three-bedroom units which will overburden the schools relative to its tax value. In contrast, if a project is zoned single-family, there are no restrictions that prevent an owner from developing the parcel, constructing homes and renting each home under one ownership group, similar to an apartment.

4 Phoenix Case Study

Chapters 1 – 3 form the first portion of this thesis. In those chapters, single-family rental was viewed from a broad lens by looking at the history of the market and the trends propelling its growth. Subsequently, the emergent build-to-rent portion of SFR and its value proposition relative to other choices was analyzed. The second portion of this thesis zooms in to analyze Phoenix at the MSA level and a Higley Park, a case study in this market.

4.1 Phoenix Economy and Demographics

The Phoenix-Mesa-Chandler metropolitan statistical area (MSA) is the 11th largest in the United States, with an estimated population of 4,857,962 as of 2018. Of MSAs with a population greater than two million, the Phoenix area was the 7th fastest growing from 2010 to 2018, growing 15.86%. As of 2017, its \$243 billion GDP was 16th largest among United States MSAs [22]. From the 2nd

quarter of 2017 to the 2nd quarter of 2018, annual population growth was an impressive 2.20% compared to 0.40% nationwide [23]. 30.3% of residents held a bachelor's degree or higher as of 2017, compared to 35% nationally [24][25].

Phoenix has a strong education, healthcare and business focused economy. Fortune 500 and Fortune 1000 companies headquartered in the area include Avnet, PetSmart, Apollo Education Group, Republic Services, ON Semiconductor and Sprouts Farmers Market. Other significant employers are the state of Arizona and other government offices (Phoenix is the capital of Arizona), Banner Health, Wells Fargo, Bank of America, Arizona State University, JP Morgan Chase, Intel, US Airways, and Dignity Health [26].

As of June, 2019, unemployment in the area is 3.7%, which is slightly higher than the US average of 3.3%. A report from the University of Arizona suggests the higher unemployment rate is due to unemployed workers returning to the labor market [27]. At first glance, this slightly higher unemployment rate may be seen as a negative on Phoenix's economy when compared to the national rate, but the opposite is revealed. While extraordinary low levels of unemployment give workers leverage, it also constrains the overall economy. A National Federation of Business survey of business executives indicated that labor was their number one concern, surpassing taxes, regulations and big business competition. A Dallas Federal Reserve report concluded that "historically tight labor markets were constraining economic growth" [28]. In sum, Phoenix's economy is doing exceptionally well and has a bright future, especially given its concentrated employment in tourism, healthcare and education.

Phoenix's economic prospects are also revealed in its blistering job growth. In 2017 and 2018 job growth was 3.0% and 3.3% respectively. This compares to just 1.6% and 1.7% nationally. The University of Arizona forecasts job growth at or above 2% for the next decade, with most of the growth occurring in education, health services, professional and business services, leisure and hospitality and trade, transportation and utilities [27]. Even with previously unemployed workers returning to the job market, exceptional population growth and job growth, wages in Arizona increased 5.5% in 2018 according to the U.S. Bureau of Economic Analysis, a full percentage point above the national rate of 4.5% [27].

While Phoenix's economic prospects are undoubtedly bright, to fully understand the story of the Phoenix real estate market, one must understand its past. This housing market was one of the most negatively impacted by the housing bubble. As can be seen in the figures below, inflation-adjusted prices dropped over 55% in Phoenix compared to a decline of 27% nationally [29]. As foreclosures peaked during the worst of the housing bust, Phoenix home values fell below replacement cost. The institutional SFR REIT companies identified in Chapter 2 swarmed the market acquiring homes and converting them to rentals. What was once a short-term arbitrage strategy has morphed into a bona fide institutional grade asset class. The seeds for SFR growth, and subsequently BTR, were planted during the depths of the market crisis in Phoenix.

In summary, Phoenix has solid job, population and wage growth and its economy is focused on durable and resilient industries such as government, tourism, education, healthcare and business and professional services. These trends are very favorable to the real estate market and ensure rent growth and investor interest – a key ingredients to returns.

Figure 20: Case-Schiller National Home Price Index Adjusted for Inflation [30].

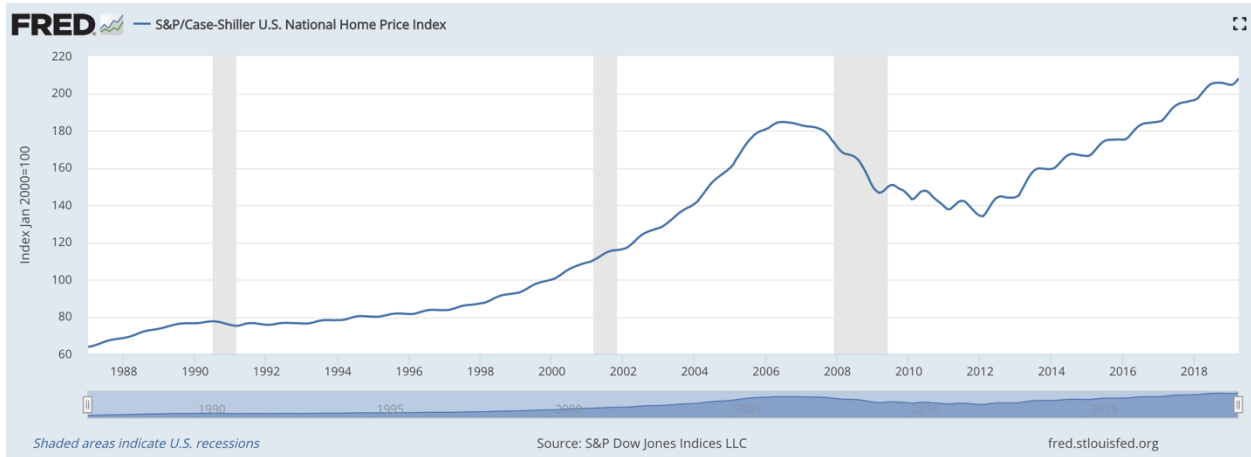
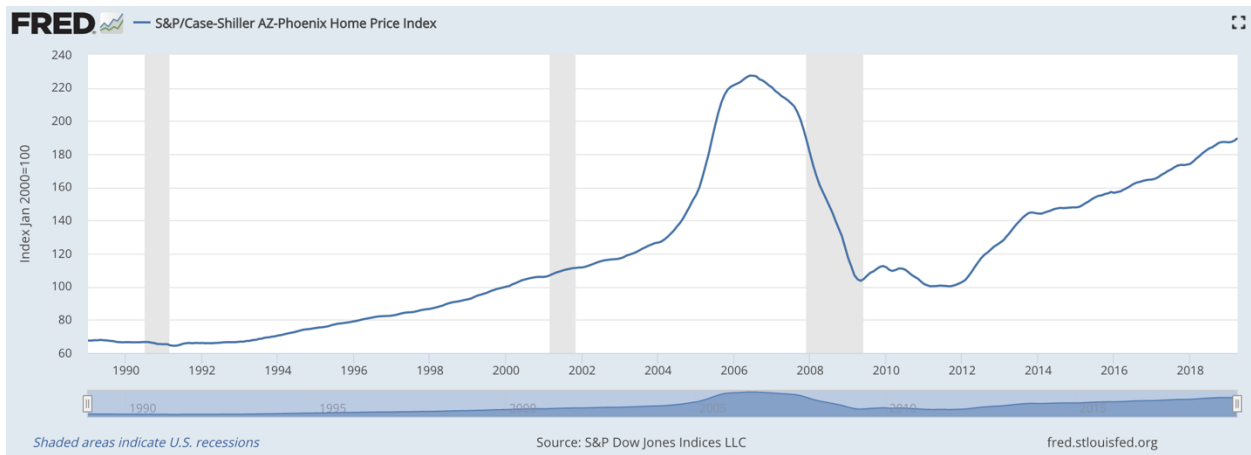


Figure 21: Case-Schiller Phoenix MSA Home Price Index Adjusted for Inflation [29].



4.2 Higley Park: Example of Phoenix Single-Family Build-to-Rent

Higley Park is a 150-unit community of single-family detached homes located in Gilbert, thirty miles east of downtown Phoenix. Gilbert is an affluent community; median household income is significantly higher than that of Phoenix: \$87,556 compared to \$56,696 [31][32]. The Zillow median home value is \$338,100, compared to \$242,800 for Phoenix [33].

This project is well-located, with direct access to the Santan Freeway and near major shopping centers (Shoppes at Gilbert Commons), employment centers and Arizona State University Polytechnic University (enrollment of nearly 10,000). The elementary, middle and high schools are rated as 6/10, 9/10 and 7/10 respectively by GreatSchools [34].

The marketing position as described on the community's website is similar to what was described in Chapter 3:

"Experience a better way of living at BB Living at Higley Park. With luxury 3- & 4-bedroom homes in Gilbert, AZ, we let you decide how much space you need to settle in comfortably.

Delicately crafted interiors offer the refined features you desire, including high ceilings, available garages, and custom cabinetry. With stunning open floor plans and interiors appointed with everything you need to live well, an exceptional living experience awaits at BB Living at Higley Park.

By combining modern interior spaces with life-enhancing community amenities, BB Living at Higley Park lets you live like you're always on vacation. Embrace the luxury that surrounds you with our assortment of resort-style community amenities, including a splash pad, a swimming pool, and a two-acre park."

Specifically, the homes offer attached garages, stainless-steel appliances, custom cabinetry, granite countertops, ceiling fans, high ceilings, private yards, walk-in closets, and a washer and dryer. The community amenities include a community pool, a two-acre park, basketball courts, a playground and splash pad. It's a 6-minute drive (2.6 miles) from Crossroads Park, a 92-acre park which features a 3.7-acre lake, multiple ball fields, a dog park and an indoor ice skating/hockey facility [34].

The upscale and luxury positioning of the product, its detached design, the affluent community of Gilbert and its excellent location command rent premiums. In the next section, these premiums are identified.

4.3 Higley Park Rents and Comparisons

Of the four case studies in this research paper, Phoenix is the only market with observable rents for BTR. As such, the premiums and hierarchy of rents in this market are of paramount importance for estimating BTR rents in the other three case studies. While a single data point is insufficient to draw specific and detailed conclusions, it is sufficient for more general conclusions. It must be recognized that one of the limitations of examining a pioneering product such as BTR is that data will be sparse and limited.

In order to compare costs and rent premiums among the different product types, comparisons are made to similar, nearby 3-bedroom, 2-bathroom properties. The Class A multifamily properties that are examined are less than 10 years old and offer better amenities than the other product types. Single-family rental properties are also less than 10 years old and in Phoenix's case, because most of these geographically, dispersed rentals are in relatively new HOA subdivisions, offer amenities similar to BTR – small playgrounds and a community pool. To compare the cost of ownership, these same SFR properties are analyzed by using Zillow's Zestimate as the home purchase price. The methodology for the comps is identical to that used in subsequent case studies, the only difference is that a BTR rent does not have to be estimated.

Arguably, a more thorough analysis would deconstruct the different amenities and features of the different homes, product types and communities and develop a statistical linear regression. For

example, each square foot would be worth \$x per month, 9' ceilings would be worth an additional \$y/month and a community pool would add \$z/month. Because this information is unavailable, these different features must be weighed qualitatively.

Higley Park is slightly more expensive than one-off single-family rentals (\$1.11/sf vs \$1.05/sf), likely due to the fact that yard keep is included in Higley Park's rent and because these units are newer by nearly seven years (2013 compared to 2006). In Chapter 3, it was noted that one-off SFR units lacked the community amenities a BTR project can offer. In this particular case, these one-off rental units have comparable amenities to Higley Park. Therefore, the biggest difference is 1) the age of the structure; 2) the fact that the composition of Higley Park is 100% renters and; 3) Higley Park has on-site leasing and maintenance staff.

Comparing rents to the cost of ownership is more difficult as a number of assumptions must be made. In this case, the loan is assumed to be 96.5% LTV, with a 3.875% interest rate on a 30-year fixed rate fully amortizing mortgage. Taxes and insurance are estimated at 2% annually based on the cost of the home. Repairs and maintenance are assumed to be minimal (only \$50/month), as these are relatively new homes. Because of the 3.5% down payment, PMI is estimated annually at 0.75% of the cost to own the home [35]. Monthly HOA fees based on Zillow's property report are also added to the cost of ownership. On a square foot basis, Higley Park is cheaper (\$1.11/sf) than the cost to own a similar property (\$1.21/sf).

However, additional considerations beyond the monthly cost must be accounted for. Amenities in a relatively new for-sale neighborhood in Phoenix are comparable to those offered in Higley Park, but the average down payment necessary to purchase a home is nearly \$10,000. The rent versus own decision then comes down to the investment value of the down payment (\$10,000 in our case study) in stocks compared to the levered returns it can achieve in housing. However, most households do not make the rent versus buy decision based on sophisticated financial models of historical stock price appreciation compared to levered housing appreciation. Instead, the analysis is based on what can be afforded today, how each housing choice suits their lifestyle and expectations about future housing price increases. Recalling the macro-economic and demographic analysis from Chapter 2, down payments are increasing unaffordable and there appears to be an increased propensity to rent and to rent for longer. Even if households wished to own a home, they may be unable to.

Finally, Higley Park is compared to three apartment communities nearby: Edge at Lyon's Gate (1/2 mile away, built 2007); Watermark at Gateway Place (2.1 miles away, built 2019); and Liv Northgate (2.5 miles away, built 2014). While these communities are more expensive on a per square foot basis by nearly 12%, they are less expensive on a gross basis by approximately \$50/month on a 3-bedroom, 2-bath unit due to their smaller size. The primary differentiator is in the amenities. These apartments offer substantially better pools and fitness centers. However, they lack attached garages and small, private yards. Notably, their demographic targeting appears to be much different than aging families. Upon a site visit, one sign advertising a "Wet & Wild with Your Neighbors Pool Party" was an unmistakable representation of their prime demographic target: millennials without families. On the other hand, Higley Park's pool was smaller and more modest, but it offered a splash pad, which is popular with toddlers and young children.

Figure 22: Three-Bedroom Rental Summary for Phoenix

Type	Avg Rent	Avg Sq	Avg Per Sq	Avg	Avg	Square of the
		Ft	Ft	Bed	Bath	Difference to Higley Park Avg Sq Ft
Higley Park Rental	\$ 1,876.00	1,695	\$ 1.11	3	2.5	N/A
Single-Family Ownership	\$ 1,945.97	1,622	\$ 1.21	3	2.6	0.009593389
Single-Family Rental	\$ 1,652.40	1,622	\$ 1.05	3	2.6	0.003800705
Multifamily	\$ 1,748.60	1,408	\$ 1.24	3	2	0.016798445
SUM:						0.030192538

Figure 23: Rent per SF in Phoenix

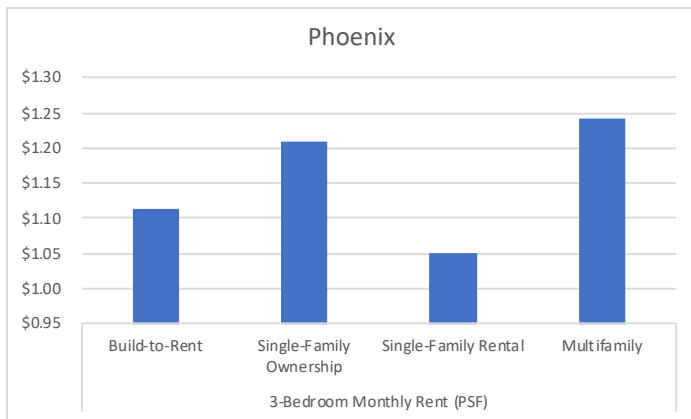
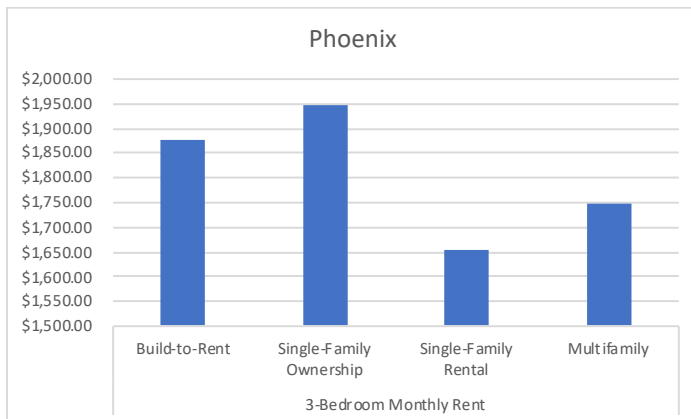


Figure 24: Gross Rent in Phoenix



The data shows that single-family build-to-rent can rent for monthly payments, on a per square foot basis, 4% lower than the monthly housing costs for ownership (principal, interest, repairs, maintenance, HOA fees, etc.). They can charge rents at a 14% premium to one-off single-family

rental units and a 7% discount to new, class A multifamily. These observed values are used to forecast rents in subsequent case studies as detailed in Appendix I.

4.4 Higley Park: Build-to-Rent Financial Analysis

Market-specific assumptions are outlined below [36]. Other notes on the financial model and other assumptions can be found in Appendix III.

Assumptions

- Exit Cap Rate: December 2017 RCA cap rates for Class A MF for Phoenix of 5.60% less 30 basis points due to decreased 10-year bond rates of 30 basis points from December 2017 to July 16, 2019. This leads to an estimated current 5.30% cap rate for Class A MF [37]. This number is then discounted by 25 basis points as single-family build-to-rent is an emerging product and transacted values for BTR projects in Phoenix have been approximately 25 basis points higher than comparable Class A MF cap rates in that market at the time of transaction. The final exit cap rate is projected to be 5.55%.
- Market Value of Land: \$11/SF for entitled, raw land in Gilbert, AZ [38].
- Rent Growth: The rent growth is assumed to be 4%, a value an SFR BTR developer uses to underwrite projects in Phoenix.
- Construction Costs: \$182,751/unit excluding land costs.
- Absorption: 10 units/month. Observed value from SFR BTR developer in Phoenix.

A residual land value is calculated by back-solving based on three financial metrics. Target values are as follows:

1. Yield on Cost: An untrended yield-on-cost (“YOC”) 100 basis points higher than projected exit cap rate. For Phoenix, this ROC is 6.55% based on the cap rate calculation above.
2. Internal Rate of Return: Hurdle rate greater than or equal to 20.00%.
3. Equity Multiple: Greater than or equal to 2.0x.

4.5 Higley Park Case Study Conclusion

Based on the metrics above, the land has a residual value of \$9.36/sf. At this price, the untrended YOC is 6.55% which generates a 100bps development spread on an assumed exit cap rate of 5.55%. The IRR is 22.62% and the equity multiple is 2.05x. However, this residual land value is 85% of the market land value of \$11/sf. While this technically means this product type cannot be supported in this market, “noise” in the assumptions likely explains the difference. Bearing in mind that data for this novel product is limited, +/- 15% is assumed to be within the margin of error for the purposes of this paper.

Figure 25: Sensitivity Analysis for Phoenix Internal Rates of Return based on Market Land Value.

IRR:	Rent Growth Rate						
	19.09%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%
Exit Cap Rate	6.50%	-0.13%	1.61%	3.33%	5.05%	6.76%	8.46%
	6.25%	2.28%	4.04%	5.79%	7.53%	9.26%	10.98%
	6.00%	4.87%	6.65%	8.43%	10.19%	11.95%	13.69%
	5.75%	7.66%	9.47%	11.27%	13.06%	14.83%	16.60%
	5.50%	10.68%	12.51%	14.34%	16.15%	17.95%	19.73%
	5.25%	13.95%	15.81%	17.66%	19.49%	21.31%	23.11%
	5.00%	17.50%	19.39%	21.26%	23.11%	24.95%	26.78%

5 Oklahoma City Case Study

As demonstrated in Chapter 5, a fast-growing metropolitan area such as Phoenix with low construction costs, low cap rates and high rent growth can support BTR development. This paper now explores three different case studies, in three tertiary markets, to evaluate whether tertiary markets can also support BTR development. These cities were chosen based on their Housing Opportunity Index (HOI) score. The HOI is “defined as the share of homes sold in that area that would have been affordable to a family earning the local median income, based on standard mortgage underwriting criteria [39].” The metric was selected to see whether housing affordability could be an identifier for viable BTR markets.

The most affordable MSA case study is Oklahoma City, OK with an HOI of 80.7, followed by Tucson, AZ with an HOI of 69.5 and finally, Fresno, CA is the least affordable tertiary market studied with an HOI of 39.9. As points of reference, Fairbanks, AK is the most affordable MSA with a score of 94.7; the median score is the Greensboro-High Point, NC MSA with a 72.6; the least affordable MSA based on the HOI is San Francisco-Redwood City-South San Francisco, CA MSA with a score of 6.9. Phoenix, AZ scores 63.9 [39].

Chapter 5 starts the tertiary market analysis with Oklahoma City, but more particularly Edmond, a suburb 14.5 miles north of the central business district. The zip code examined is 73025. Similar to subsequent case studies, this area is chosen from within the MSA by searching for new home construction. Finding a concentration of new home development suggests the area not only is in the path of growth, but also might be far enough from the city core to assemble a hypothetical twenty-acre parcel.

5.1 Oklahoma City Economy and Demographics

As of 2018, Oklahoma City is the 41st largest MSA in the country with a population of nearly 1.4 million and its \$75 billion GDP in 2017 ranks it 48th in the nation [22]. According to the U.S. Census Bureau, the median household income is \$56,260. 29.6% of residents held a bachelor’s degree or higher in 2017, compared to 35% nationally [40][25].

Oklahoma City's economy is undeniably tied to the oil & gas industry (Mining, Logging & Construction per BLS classification). At the national level, this category accounts for only 0.4% of nonfarm jobs. However, in Oklahoma City these jobs account for 7.8% of all jobs – a concentration nearly 20 times higher than the overall national level. Indirectly, these jobs account for many multiple more jobs in every other sector, including manufacturing, retail, transportation, utilities, financial activities and other services [41].

As a counterweight, this MSA also has a significant concentration of government jobs. The four largest employers in the MSA are 1) the state of Oklahoma government with 47,300 jobs; 2) Tinker Air Force Base with 27,000 jobs; 3) the University of Oklahoma with 17,700 jobs; and 4) the Federal Aviation Administration with 7,000 employees. These stable education and governmental employers represent 20% of the workforce compared to 17.7% at the national level. These jobs serve as a bulwark to the cyclicity of commodity prices [41].

Oklahoma City experienced annual job growth of 1.63% from 2016 to 2018, on par with the national rate of 1.56%. Similarly, households grew annually by 0.75% from 2016 to 2018, nearly identical to the 0.79% annual growth rate of the nation as a whole. This contrasts with fast-growing Phoenix's job growth and household growth rates of 3.23% and 1.93% respectively [40]. Phoenix's job growth was 2 times that of Oklahoma City's and its household growth was over 2.5 times faster. This is attributed to the different economies of these MSAs. While both cities serve as the capital for their state's government and have a high quantity of government jobs, the primary difference is that Oklahoma City's economy is energy dependent while Phoenix's is more diversified and more heavily concentrated in industries such as education, health care and business and professional services. These lower growth rates strongly impact rent growth and investor interest, significantly impacting returns as will be seen later.

5.2 Oklahoma City Rents and Comparisons

Calculations for BTR rent estimates are detailed in Appendix I. In summary, rents are projected by comparing per square foot rents of nearby new, Class A multifamily properties, mom-and-pop single-family rentals and the cost of purchasing an entry-level home. BTR rents are projected using a least sum of the square of differences to ensure rents do not deviate excessively from the competing products. This rent that minimizes the sum is compared against observed rent differences among the different product types, including BTR, in Phoenix. All rents minimize the sum of the squared differences and are reasonably close to the observed hierarchy and differences in Phoenix. The Oklahoma City case study is underwritten with an SFR BTR rental rate of \$1,682.10 for an 1,800 square foot, 3-bedroom, 2-bath and 2-car garage home.

Figure 26: Projected BTR Rents in Oklahoma City

THREE BEDROOM SUMMARY - OKLAHOMA CITY							<u>Least Sum of</u>
<u>Type</u>	<u>Rent</u>	<u>Sq Ft</u>	<u>Per Sq Ft</u>	<u>Bed</u>	<u>Bath</u>	<u>Square of</u>	<u>Differences</u>
<i>Projected OKC SFR BFR</i>	<i>\$ 1,682.10</i>	<i>1,800</i>	<i>\$ 0.93</i>	<i>3</i>	<i>2</i>		N/A
Single-Family Ownership	\$ 1,703.80	1,853	\$ 0.92	3	2.1		0.000111749
Single-Family Rental	\$ 1,752.00	1,853	\$ 0.96	3	2.1		0.000678559
Multifamily	\$ 1,109.33	1,213	\$ 0.92	3	2		0.000239568
							0.001029876

5.3 Build-to-Rent Financial Analysis

Market-specific assumptions are outlined below [42]. Other notes on the financial model and other assumptions can be found in Appendix III.

Assumptions

- Exit Cap Rate: December 2017 RCA cap rates for Class A MF for southwest region tertiary markets of 6.40% less 30 basis points due to decreased 10-year bond rates of 30 basis points from December 2017 to July 16, 2019. This leads to an estimated current 6.10% cap rate for Class A MF [37]. This number is then discounted by 25 basis points as single-family build-to-rent is an emerging product and transacted values for BTR projects in Phoenix have been approximately 25 basis points higher than comparable Class A MF cap rates in that market at the time of transaction [36]. The final exit cap rate is projected to be 6.35%.
- Market Value of Land: \$1.50/SF for entitled, raw land in Edmond.
- Rent Growth: The rent growth is calculated by taking 4%, value an SFR BTR developer uses to underwrite projects in Phoenix, and adjusting it by multiplying it by a ratio calculated by dividing the compound annual growth rate (“CAGR”) of gross median rents in Oklahoma City from 2012 – 2017 by the CAGR of gross median rents in Phoenix.
 - 4% times (1.93%/2.46%) = \$3.13[43].
- Construction Costs: \$199,362 /unit excluding land costs [42][44].
- Because there are no comparable BTR projects to compare, absorption must be estimated. Absorption was estimated by comparing the number of homes sold in nearby for-sale, entry-level housing subdivisions. Falling Springs, a D.R. Horton project in Edmond with a price point of +/- \$220,000 has averaged 4 closings per month.

A residual land value is calculated by back-solving based on three financial metrics. Target values are as follows:

4. Yield on Cost: An untrended yield-on-cost (“YOC”) 100 basis points higher than projected exit cap rate. For Phoenix, this number is 6.55%, for Oklahoma City it is 7.35%.
5. Internal Rate of Return: Hurdle rate greater than or equal to 20.00%.
6. Equity Multiple: Greater than or equal to 2.0x.

5.4 Case Study Conclusion

A residual land value cannot be calculated because even at a land cost of \$0, the untrended YOC is 6.63% which would only generate a development spread of only 28bps on the estimated exit cap rate. At the market value of land (\$1.50/sf), the ROC is 6.37%. This is very similar to Phoenix's ROC of 6.31% as the two markets have similar total development costs and Oklahoma City's larger units make up for the lower rental rate. The fact that the Phoenix and Oklahoma City untrended ROCs are so similar, but the other financial metrics are so different illustrates a fundamental lesson of tertiary markets: rent growth and cap rates are essential to time-weighted returns.

As can be seen in the figure below, acceptable returns (IRR > 20.00%) can be achieved if rent growth accelerates and/or cap rates decrease. However, almost by definition, a tertiary market will not experience explosive rent growth or market leading cap rates. As discussed in the macro overview of Oklahoma City, this MSA's economy is dependent on energy extraction. While rent growth will sometimes exceed 4% depending on the commodity cycle, these rates are unlikely to be sustained. Furthermore, Oklahoma City is a low barrier to entry real estate development market with elastic supply – 4% growth rates do not seem achievable long term. And finally, Oklahoma City's economy does not have a critical mass of the sort of innovative industries most responsible for economic growth in the 21st century, sectors such technology, biotechnology, financial services or computer science.

Figure 27: Sensitivity Analysis for Oklahoma City Internal Rates of Return based on Market Land Value

IRR:	Rent Growth Rate						
	7.73%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%
Exit Cap Rate	6.50%	-1.60%	0.84%	3.16%	5.38%	7.50%	9.54%
	6.25%	1.83%	4.11%	6.29%	8.39%	10.41%	12.36%
	6.00%	5.16%	7.31%	9.38%	11.38%	13.31%	15.18%
	5.75%	8.44%	10.48%	12.45%	14.35%	16.21%	18.01%
	5.50%	11.68%	13.63%	15.51%	17.34%	19.13%	20.87%
	5.25%	14.92%	16.78%	18.59%	20.36%	22.08%	23.77%
	5.00%	18.18%	19.97%	21.71%	23.42%	25.09%	26.73%

6 Tucson City Case Study

The next tertiary market evaluated is Tucson, Arizona, specifically zip code 85704 located 13 miles north of the Tucson central business district. Tucson's Housing Opportunity Index score is 69.5, which is near the median score of 72.6 [39].

6.1 Tucson Economy and Demographics

The Tucson MSA is the 53rd largest in the country with a 2018 estimated population of 1,039,073. The GDP in 2017 was nearly \$34 billion[45], with jobs concentrated in education, defense and transportation. The University of Arizona is located in Tucson and boasts an enrollment of 44,831 in 2017. The Army Intelligence Center has led to a cluster of high-tech and defense related industries, including Raytheon, Texas Instruments, IBM, Intuit, Universal Avionics, Honeywell Aerospace, Sunquest Information Systems, Sanofi-Aventis and Bombardier Aerospace. Similarly, research at the University of Arizona has led to a cluster of optics related companies and led some to call the area “Optics Valley”. Tourism and second homes are another large contributor to Tucson’s economy due to the warm and sunny weather in the winter [46]. The percent of residents with a bachelor’s degree or higher is 31.6% compared to 35% nationally [25][40]. Median household income is only \$51,425 compared to \$60,336 nationally [40].

Top employers in the Tucson MSA are [46]:

1. University of Arizona – 11,235 employees
2. Raytheon Missile Systems – 9,600 employees
3. State of Arizona – 8,524 employees
4. Davis-Monthan Air Force Base – 8,335 employees

Just as in Oklahoma City, Tucson experiences job and household growth on par with the national rate, but significantly below fast-growing Phoenix. In fact, Tucson’s annual job growth of only 1.27% from 2016 to 2018 is less than the national rate of 1.56%. Households grew at a nearly identical pace – 0.80% in Tucson versus 0.79% nationally. Phoenix’s job growth and household growth is 2.5 times and 2.4 times faster than Tucson’s, respectively [40].

6.2 Tucson Rents and Comparisons

Calculations for BTR rent estimates the same for all 4 case studies. The methodology is detailed in Chapter 4 and Appendix I. Tucson’s projected SF BTR rental rate is \$2,132.01 for 2,000 square feet in a 3-bedroom, 2.5-bathroom, 2-car garage single-family home.

Figure 28: Projected BTR Rents in Tucson

THREE BEDROOM SUMMARY - TUCSON						
<u>Type</u>	<u>Avg Rent</u>	<u>Avg Sq Ft</u>	<u>Avg Per Sq Ft</u>	<u>Avg Bed</u>	<u>Avg Bath</u>	<u>Square of the Difference to Higley Park Avg Sq Ft</u>
<i>PROJECTED FRESNO SFR BTR</i>	\$ 2,132.01	2,000	\$ 1.07	3	2.5	N/A
Single-Family Ownership	\$ 2,196.12	2,047	\$ 1.08	3	2.3	0.000139204
Single-Family Rental	\$ 1,788.00	2,067	\$ 0.88	3	2.3	0.036119024
Multifamily	\$ 1,558.67	1,249	\$ 1.24	3	2	0.031773631
				SUM:		0.068031859

6.3 Build-to-Rent Financial Analysis

Market-specific assumptions are outlined below. Other notes on the financial model and other assumptions can be found in Appendix III.

Assumptions

- Exit Cap Rate: December 2017 RCA cap rates for Class A MF for southwest region tertiary markets of 6.40% less 30 basis points due to decreased 10-year bond rates of 30 basis points from December 2017 to July 16, 2019. This leads to an estimated current 6.10% cap rate for Class A MF [37]. This number is then discounted by 25 basis points as single-family build-to-rent is an emerging product and transacted values for BTR projects in Phoenix have been approximately 25 basis points higher than comparable Class A MF cap rates in that market at the time of transaction [36]. The final exit cap rate is projected to be 6.35%.
- Market Value of Land: \$6.00/SF for entitled, raw land in north Tucson [47].
- Rent Growth: The rent growth is calculated by taking 4%, a value an SFR BTR developer uses to underwrite projects in Phoenix, and adjusting it by multiplying it by a ratio calculated by dividing the compound annual growth rate (“CAGR”) of gross median rents in Tucson from 2012 – 2017 by the CAGR of gross median rents in Phoenix.
 - 4% times (1.86%/2.46%) = 3.02% [43].
- Construction Costs: \$212,261/unit excluding land costs [44].
- Because there are no comparable BTR projects to compare, absorption must be estimated. Absorption was estimated by comparing the number of homes sold in nearby for-sale, entry-level housing subdivisions. Cantera, a subdivision by LGI Homes with a price point starting at \$207,900 has averaged 8 closings per month. This number is used to estimate monthly leasing absorption.

A residual land value is calculated by back-solving based on three financial metrics. Target values are as follows:

7. Yield on Cost: An untrended yield-on-cost (“YOC”) 100 basis points higher than projected exit cap rate. For Phoenix, this number is 6.55%, for Tucson it is 7.35%.
8. Internal Rate of Return: Hurdle rate greater than or equal to 20.00%.
9. Equity Multiple: Greater than or equal to 2.0x.

6.4 Case Study Conclusion

Based on the metrics above, the land has a residual value of \$2.92/sf. At this price, the untrended YOC is 7.35% which generates a 100bps development spread on an assumed exit cap rate of 6.35%. The IRR is 20.75% and the equity multiple is 1.88x. However, this residual land value is 49% of the market land value of \$6/sf. At the market price of \$6/sf, the untrended ROC is 6.85%, the IRR is 13.91% and the equity multiple is 1.60x. Interestingly, the ROC is actually higher than that of Phoenix (6.31%) because total development costs per unit are nearly identical while the income from Tucson is greater because of the larger home sizes in this market. The primary obstacle in this market is that cap rates are 80bps higher compared to Phoenix. If cap rates in

Tucson were also 5.55%, a developer could exit the Tucson case study project at a price 14% greater, resulting in an additional \$6.5m residual value. Just as in Oklahoma City, acceptable returns (IRR > 20.00%) can be achieved if rent growth accelerates and/or cap rates decrease. But for the same reasons noted in Chapter 5, this is much less likely in a tertiary market, especially one with large supply elasticities and abundant land.

Figure 29: Sensitivity Analysis for Tucson Internal Rates of Return based on Market Land Value

		Rent Growth Rate					
		1.50%	2.00%	2.50%	3.00%	3.50%	4.00%
Exit Cap Rate	IRR:	13.91%	13.91%	13.91%	13.91%	13.91%	13.91%
	6.50%	6.56%	8.46%	10.35%	12.22%	14.08%	15.92%
	6.25%	9.27%	11.18%	13.07%	14.95%	16.81%	18.65%
	6.00%	12.13%	14.05%	15.95%	17.83%	19.69%	21.54%
	5.75%	15.17%	17.09%	18.99%	20.88%	22.74%	24.60%
	5.50%	18.39%	20.31%	22.21%	24.10%	25.97%	27.83%
	5.25%	21.80%	23.73%	25.64%	27.53%	29.40%	31.26%
	5.00%	25.44%	27.37%	29.28%	31.17%	33.04%	34.90%

7 Fresno City Case Study

The final case study is Fresno in California, more particularly the 93727 zip code located approximately five miles east of the central business district. Fresno’s Housing Opportunity Index score is 39.9, which is considerably below the median score of 72.6 [39].

7.1 Fresno Economy and Demographics

Fresno is the 54th largest MSA according to 2018 estimates with a population of 994,400. Its GDP is \$42 billion. Fresno is a launch point for traveling to major U.S. National Parks such as Yosemite (two hours by car), King’s Canyon (1 hour by car) and Sequoyah National Park (1.5 hours by car). Most notably, however, Fresno is the anchor for the agriculturally prolific San Joaquin Valley – one of the world’s most fertile agricultural basins. In fact, Fresno County is the most agriculturally dependent county in the United States [48]. Only 20.1% of residents held a bachelor’s degree or higher compared to 35% nationally [25][40]. Median household income is only \$51,800 compared to \$60,336 nationally. The low household income and exorbitant construction and development costs and explain Fresno’s poor HOI score.

Fresno’s job and population growth are much slower than Phoenix. Its 2.04% annual job rate growth for 2018 was 62% of Phoenix’s and its population growth since 2010 was 43% of Phoenix’s. These slower demographic growth rates impact rental growth, as Fresno’s 2012 – 2017 compound annual growth rate of gross median rents was 62% that of Phoenix’s [49][40].

7.2 Fresno Rents and Comparisons

Calculations for BTR rent estimates the same for all 4 case studies. The methodology is detailed in Chapter 4 and Appendix I. Fresno’s projected SF BTR rental rate is \$1,907.62 for 1,700 square feet in a 3-bedroom, 2.5-bathroom, 2-car garage single-family home.

Figure 30: Projected BTR Rents in Fresno

THREE BEDROOM SUMMARY - FRESNO						
<u>Type</u>	<u>Avg Rent</u>	<u>Avg Sq Ft</u>	<u>Avg Per Sq Ft</u>	<u>Avg Bed</u>	<u>Avg Bath</u>	<u>Square of the Difference to Higley Park Avg Sq Ft</u>
<i>PROJECTED FRESNO SFR BTR</i>	\$ 1,907.62	1,700	\$ 1.12	3	2.5	N/A
Single-Family Ownership	\$ 1,991.86	1,688	\$ 1.19	3.2	2.3	0.004374902
Single-Family Rental	\$ 1,678.00	1,688	\$ 1.01	3.2	2.3	0.01243388
Multifamily	\$ 1,460.00	1,233	\$ 1.17	3	2	0.002057917
				SUM:		0.018866699

7.3 Build-to-Rent Financial Analysis

Market-specific assumptions are outlined below. Other notes on the financial model and other assumptions can be found in Appendix III.

Assumptions

- Exit Cap Rate: December 2017 RCA cap rates for Class A MF for west region tertiary markets of 5.90% less 30 basis points due to decreased 10-year bond rates of 30 basis points from December 2017 to July 16, 2019. This leads to an estimated current 5.60% cap rate for Class A MF [37]. This number is then discounted by 25 basis points as single-family build-to-rent is an emerging product and transacted values for BTR projects in Phoenix have been approximately 25 basis points higher than comparable Class A MF cap rates in that market at the time of transaction [36]. The final exit cap rate is projected to be 5.85%.
- Market Value of Land: \$8.00/SF for entitled, raw land in east Fresno [50].
- Rent Growth: The rent growth is calculated by taking 4%, a number a SFR BTR developer uses to underwrite projects in Phoenix, and adjusting it by multiplying it by a ratio calculated by dividing the compound annual growth rate (“CAGR”) of gross median rents in Fresno from 2012 – 2017 by the CAGR of gross median rents in Phoenix.
 - 4% times (1.53%/2.46%) = 2.49% [43].
- Construction Costs: \$304,349/unit excluding land costs [44].
- Because there are no comparable BTR projects to compare, absorption must be estimated. Absorption was estimated by comparing the number of homes sold in nearby for-sale, entry-level housing subdivisions. Daffodil Hills in east Fresno, project by Lennar Homes with a price point in the “high 200’s” has averaged 5 closings per month. This number is used to estimate monthly leasing absorption.

A residual land value is calculated by back-solving based on three financial metrics. Target values are as follows:

10. Yield on Cost: An untrended yield-on-cost (“YOC”) 100 basis points higher than projected exit cap rate. For Phoenix, this number is 6.55%, for Fresno it is 6.85%.
11. Internal Rate of Return: Hurdle rate greater than or equal to 20.00%.
12. Equity Multiple: Greater than or equal to 2.0x.

7.4 Case Study Conclusion

Of the three tertiary case studies, Fresno is the least viable due to the high development costs. Fresno’s estimated BTR rent is \$1.12/sf which is nearly identical to Phoenix’s observed value of \$1.11/sf. Likewise, Fresno’s home size of 1,700 square feet is essentially equal to Phoenix’s 1,695 square feet. However, construction costs are 1.6 times more expensive per unit in Fresno (\$182,751/unit in Phoenix versus \$304,349/unit in Fresno). At an untrended YOC of 4.32%, cap rates would have to be a seemingly unrealistic 3.32% to achieve the necessary development spread. Additionally, Fresno’s weak rent growth restrains high IRRs. As can be seen in the figure below, acceptable returns (IRR > 20.00%) can be achieved only with absurd rent growth and/or cap rates.

Figure 31: Sensitivity Analysis for Fresno Internal Rates of Return based on Market Land Value

IRR:	Rent Growth Rate												
	0.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%	5.50%	6.00%	6.50%	7.00%
Exit Cap Rate	6.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-6.88%	-4.82%
5.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-7.50%	-5.41%	-3.38%	-1.40%
5.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-5.87%	-3.80%	-1.79%	0.16%	2.08%
5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-6.17%	-4.08%	-2.05%	-0.06%	1.87%	3.76%	5.61%
4.75%	0.00%	0.00%	0.00%	0.00%	-6.31%	-4.19%	-2.13%	-0.13%	1.83%	3.74%	5.60%	7.43%	9.22%
4.50%	0.00%	-6.25%	-4.11%	-2.03%	-0.01%	1.96%	3.89%	5.77%	7.62%	9.42%	11.19%	12.92%	
4.25%	-3.82%	-1.72%	0.32%	2.30%	4.24%	6.14%	8.00%	9.81%	11.59%	13.34%	15.06%	16.74%	
4.00%	0.88%	2.88%	4.83%	6.73%	8.60%	10.42%	12.21%	13.97%	15.70%	17.39%	19.06%	20.70%	
3.75%	5.67%	7.58%	9.45%	11.28%	13.08%	14.84%	16.58%	18.28%	19.95%	21.60%	23.23%	24.83%	
3.50%	10.59%	12.43%	14.23%	15.99%	17.73%	19.44%	21.12%	22.77%	24.40%	26.01%	27.59%	29.16%	
3.25%	15.69%	17.46%	19.20%	20.90%	22.59%	24.24%	25.88%	27.49%	29.08%	30.65%	32.20%	33.74%	

8 Conclusion

Based on the quantitative research and four case studies, two primary conclusions can be drawn: 1) tertiary markets, almost by definition, have lower rental growth rates and higher cap rates which are significant impediments to achieving required returns; and 2) BTR variants other than the model explored here (i.e. +/- 1,900 square foot units, 8 units per acre on traditional lots) may be better suited for some tertiary markets.

8.1 SFR Background Recap

Chapter 2 recounted the history and role of single-family rentals in the US housing market and identified this segment as small, growing and increasingly institutionalized. Trends fueling the growth in this space were shown to be economic, demographic and preference related. Student debt has weighed down the balance sheet of millennials, the generation entering prime first-time homebuying years. Concurrently, rising land and construction costs have made the very entry-level homes such buyers would purchase difficult to build. For those able to afford a down payment, credit remains tight, with required credit scores to qualify near 30-year highs. Some commentators have even suggested that there has been a shift in preferences and that the allure of homeownership has faded, as plummeting home values during the Great Recession fundamentally altered homebuyers' attitudes towards homeownership.

As shown in Chapter 3, Build-to-Rent ("BTR") claims to be logical evolution of single-family rental – the combined benefits of a single-family detached structure with the amenities and flexibility of multifamily all operated and maintained by an institutional quality onsite team. BTR has many variants, from rowhouses to duplexes to large luxury units over 2,000 square feet. This paper's case studies were based on single-family homes at a density of 8 units per acre ranging from 1,700 square feet to 2,000 square feet. Communities would have 160 units and offer a playground, pool and splash pad. These community amenities would be a slightly lower standard than those found in a multifamily unit of a similar age, but the interior finishes would be relatively upscale – faux wood flooring and granite countertops. Furthermore, as a key differentiator, all units would have attached 2-car garages and small yards.

Chapter 4 showed what a successful BTR market and development project look like using Phoenix, AZ as a case study. Using estimated values for current construction costs and rents, rent growth rates, exit cap rates and other metrics, a residual land value was calculated based on assumed target returns of a 100bps development spread, a 20% IRR and a 2.0x equity multiple. The residual land value was calculated to be \$9.36 compared to a market land value of \$11.00 for Gilbert, AZ. Knowing that BTR does in fact work in this market, the 15% difference between calculated residual value and market value is attributed to "noise" in the assumptions and illustrates an important point: BTR is a pioneering and novel product, and as such, the data is not as robust or complete as would be necessary to draw specific and detailed conclusions. Nevertheless, as shown in the Phoenix case study, these assumptions are close enough to make broad and general conclusions about the target question this paper answers. That central question is this: Is the traditional, detached single-family build-to-rent model as used in Phoenix viable in tertiary markets? The short answer: no, for reasons explained in greater detail below.

Figure 32: Summary of Key Inputs, Assumptions and Conclusions.

	National	Phoenix-Mesa- Scottsdale, AZ Metro Area	Oklahoma City, OK Metro Area	Tucson, AZ Metro Area	Fresno, CA Metro Area
Macro					
Population	325,719,178	4,737,270	1,383,737	1,022,769	989,255
Housing Opportunity Index	61.4	63.9	80.7	69.5	39.9
Household Income	\$ 60,336	\$ 61,506	\$ 56,260	\$ 51,425	\$ 51,800
Median Age	38.1	36.7	35.2	38.5	32.3
Bachelor's Degree or Higher	35.0%	31.1%	29.6%	31.6%	20.4%
2016 - 2018 Job Growth (CAGR)	1.56%	3.23%	1.63%	1.27%	2.87%
2014 - 2017 HH Growth (CAGR)	0.79%	1.93%	0.75%	0.80%	1.27%
Assumptions					
Estimated BTR Gross Rent	-	\$ 1,876	\$ 1,682	\$ 2,132	\$ 1,908
Estimated BTR Square Feet	-	1,695 SF	1,800 SF	2,000 SF	1,700 SF
Estimated BTR Rent per SF	-	\$1.11 / SF	\$0.93 / SF	\$1.07 / SF	\$1.12 / SF
SF Ownership Premium over BTR	-	9%	-1%	1%	6%
Absorption	-	10 Units / Mo	4 Units / Mo	8 Units / Mo	5 Units / Mo
SF Rent Growth	-	4.0%	3.1%	3.0%	2.5%
Cap Rate Class A MF	5.30%	5.30%	6.10%	6.10%	5.60%
Cap Rate Discount	-	25 bps	25 bps	25 bps	25 bps
Estimated BTR Cap Rate	-	5.55%	6.35%	6.35%	5.85%
Development Costs / Unit (Exc Land)	-	\$182,751 / Unit	\$199,362 / Unit	\$212,261 / Unit	\$304,349 / Unit
TDC / Unit (at Market Land Value)	-	\$244,209 / Unit	\$209,092 / Unit	\$246,494 / Unit	\$349,472 / Unit
Results					
Market Land Value per SF	-	\$11.00 per SF	\$1.50 per SF	\$6.00 per SF	\$8.00 per SF
Residual Land Value per SF	-	\$9.36 per SF	\$0.00 per SF	\$2.92 per SF	\$0.00 per SF
Residual LV / Market LV Ratio	-	85%	0%	49%	0%
Untrended YOC at Residual LV	-	6.61%	6.58%	7.35%	4.94%
Internal Rate of Return at Residual LV	-	22.78%	11.10%	20.09%	0.00%
Equity Multiple at Residual LV	-	2.05x	1.42x	1.85x	0.58x

8.2 Lesson 1: Tertiary Markets' Growth Rates and Cap Rates Significantly Affect Returns

Tertiary markets generally have slower household and job growth, which acts as a governor on rent growth. Relatedly, assets transact at higher cap rates in tertiary markets not only due to this slower growth, but also because the market is not as deep or liquid. Additionally, the investment picture is generally murkier in a tertiary market as these markets lack the comprehensive, historical and detailed data that a primary market such as Boston may offer. Notably, a project can be built in Oklahoma City and Tucson, assuming market value of land, at nearly equivalent untrended ROCs of 6.37% and 6.85%, respectively, compared to Phoenix's 6.31%. However, with rent growth only 3% compared to 4% and expenses estimated to grow at 2% in all four markets, net cash flow growth in these tertiary markets is half that one Phoenix's. The chart below shows how returns improve in Oklahoma City and Tucson if these markets had rent growth and cap rates equal to those of Phoenix. In Fresno's case, primary market growth rates and cap rates cannot mitigate the high construction costs for a single-family detached product.

Figure 33: Returns Dramatically Improve for Oklahoma City and Tucson if Rent Growth and Cap Rates are Equivalent to those of Primary Markets,

Phoenix			Oklahoma City		
	Tertiary Market Assumptions	Primary Market Assumptions		Tertiary Market Assumptions	Primary Market Assumptions
Assumptions			Assumptions		
Rent Growth	N/A	4.00%	Rent Growth	3.13%	4.00%
Cap Rate	N/A	5.55%	Cap Rate	6.35%	5.55%
Returns			Returns		
ROC	N/A	6.31%	ROC	6.37%	6.37%
IRR	N/A	19.09%	IRR	8.40%	20.87%
EM	N/A	1.88x	EM	1.31x	1.93x
Tucson			Fresno		
	Tertiary Market Assumptions	Primary Market Assumptions		Tertiary Market Assumptions	Primary Market Assumptions
Assumptions			Assumptions		
Rent Growth	3.02%	4.00%	Rent Growth	2.50%	4.00%
Cap Rate	6.35%	5.55%	Cap Rate	6.35%	5.55%
Returns			Returns		
ROC	6.85%	6.85%	ROC	4.32%	4.32%
IRR	13.91%	27.17%	IRR	0.00%	0.00%
EM	1.60x	2.25x	EM	0.22x	0.52x

BTR developers are clearly aware of the importance of rent growth. Rent growth is directly related to job and population growth among other factors. BB Living's recent joint venture with Toll Brothers in six select US markets illustrates this point. As can be seen in Figure 34, 35 and 36 below, all of the metropolitan areas BB Living chose are fast growing – much faster growing than the three tertiary cities studied in this paper. With the exception of Houston's 10-year projected job growth, these metros have 2018 job growth or future job projections significantly higher than the national rate [49], while the tertiary markets studied in this paper have rates of growth near, or below, the national average. Quite possibly the most striking takeaway from these six markets that BB Living has identified is the inclusion of a tertiary market, Boise, Idaho with an MSA level population of only 730,000. However, it is clearly evident why it has been included – Boise's population growth has been 2.28x greater than the average of Oklahoma City, Tucson and Fresno. Similarly, its job growth has been 1.61x greater than these other markets. Even when compared to the other primary markets selected by BB Living, Boise ranks first in job growth and population growth. There was no discernable difference among these markets based on median age.

Figure 34: BB Livings’s Six Target Markets vs Case Study Markets Ranked by Population Growth [22]:

	2018 Population of MSA	Population Growth since 2010	Rank
National	32,720,000	6%	
Boise*	730,426	18.47%	1
Houston*	6,997,384	18.19%	2
Dallas*	7,539,711	17.33%	3
Phoenix*	4,857,962	15.86%	4
Denver*	2,932,415	15.29%	5
Jacksonville*	1,534,701	14.05%	6
Oklahoma City	1,396,445	11.45%	7
Fresno	994,400	6.87%	8
Tucson	1,039,073	6.00%	9

* = BB Living Target City

Figure 35: BB Livings’s Six Target Markets vs Case Study Markets Ranked by 2018 Job Growth [49].

	2018 Job Growth	Rank	2018 Job Growth vs National Average	10-Year Projected Job Growth Gains	Rank	10-Year Growth vs National Average
National	1.59%		-	33.51%		-
Boise*	3.55%	1	2.23x	50.85%	1	1.52x
Phoenix*	3.30%	2	2.08x	48.24%	2	1.44x
Dallas*	3.27%	3	2.06x	45.12%	3	1.35x
Houston*	3.18%	4	2.00x	30.92%	9	0.92x
Jacksonville*	2.75%	5	1.73x	44.39%	5	1.32x
Denver*	2.75%	6	1.73x	45.00%	4	1.34x
Oklahoma City	2.57%	7	1.62x	32.36%	8	0.97x
Fresno	2.04%	8	1.28x	32.88%	7	0.98x
Tucson	2.01%	9	1.26x	33.10%	6	0.99x

* = BB Living Target City

Figure 36: BB Livings’s Six Target Markets vs Case Study Markets Ranked by Gross Median Rent Growth from 2012 – 2017 [43].

	5-Year Growth of Gross Median Rent	Rank
National	2.10%	
Denver*	6.41%	1
Dallas*	3.69%	2
Houston*	2.93%	3
Boise*	2.51%	4
Phoenix*	2.46%	5
Oklahoma City	1.93%	6
Tucson	1.86%	7
Jacksonville*	1.84%	8
Fresno	1.53%	9

* = BB Living Target City

8.2.1 Argument for Lower Cap Rates on SFR Compared to MF

Growth rates may be immutable, but cap rates are not. Cap rates represent investors’ willingness to pay for a certain series of cash flows. Three factors could influence cap rates, altering the time-weighted returns of BTR in tertiary markets:

1. The overall attractiveness of real estate as an asset class compared to other investment classes, such as stocks and bonds;
2. The tertiary market cap rate discount compared to primary markets due to informational asymmetry or perceived riskiness of tertiary markets (i.e. factors not related to growth) could change;
3. The spread between Class A Multifamily cap rates and those of BTR projects could change.

Number 3 deserves particular attention. A primary assumption made in all four case studies was that exit cap rates were estimated to be 25bps greater than Class A Multifamily cap rates. Indeed, this 25bps spread is what BTR developers have exited investments at in Phoenix. Presumably, this discount is due to the lack of long-term evidence of historical returns for this new product type. However, data suggests SFR property values experience significantly less volatility than multifamily and other commercial real estate property sectors as can be seen in Figure 37. Therefore, an argument could be made that cap rates should in fact be lower than Class A Multifamily rates.

Figure 37: SF Property Values Have Historically Lower Volatility

ANNUALIZED STANDARD DEVIATION OF LOG PRICE CHANGES				
	SF HPI	Apartment CPPI	Office CPPI	Retail CPPI
5 yr	4.2%	1.7%	5.3%	3.7%
10yr	6.4%	14.5%	17.2%	13.6%
15yr	7.3%	12.8%	15.0%	12.7%

Not only does the historical evidence document lower volatilities, so does a forward-looking analysis of REIT values from Amherst Capital. In this forward-looking analysis, Amherst Capital calculated implied property value volatilities based on asset values of public REITs. Their conclusion: “Looking across various REIT sectors we find that despite the relatively short time that SFR REITs have been in the market, the projected option-implied property value volatilities in SFR space are ~10-11% for SFR, compared to 15-16% for apartments, 16-17% for student housing, and 13- 14% for manufacture housing REITs. This lower historical and implied forward volatility should, all else being equal, make SFR investments look more favorable than other commercial real estate/multi-family investments at similar or even lower cap rates. [10]”

Based on the above, SFR volatility is roughly 2/3 that of other commercial property sectors. Historical risk premiums (“RP”) for stabilized, institutional grade real estate are around 4% [51, p. 245]. If risk premiums are proportional to volatility as theory suggests they should, then risk premiums for SFR could be 2/3 of the 4% RP, which is approximately 130bps less. Cap rates equal the risk-free rate plus RP less the growth rate. If the RP is 130bps less, the cap rate would be 130bps less. To be conservative, it will be assumed that SFR cap rates could eventually be only 75bps lower compared to Class A MF as institutional money managers and others come to appropriately price the risk in this emerging asset class. Recalling that the case studies assumed a 25bps discount, rather than a premium as this data suggests, this 100bps swing in the cap rate has a dramatic impact on total returns and residual land values as can be seen in Figure 38.

While Fresno’s exorbitant construction costs still constrain returns, Oklahoma City’s residual value under the above assumptions is 3% over its market value and Tucson’s is an impressive 60% above its market value based on these lower cap rates.

Figure 38: Same Tertiary Market Growth Rates as Assumed in Case Studies, but Exit Cap Rates 75bps Lower than Relevant Class A MF Cap Rates.

Phoenix			Oklahoma City		
Cap Rate	5.55%	4.55%	Cap Rate	6.35%	5.35%
ROC	6.31%	6.31%	ROC	6.37%	6.37%
IRR	19.09%	34.19%	IRR	8.40%	20.18%
EM	1.88x	2.64x	EM	1.31x	1.89x
Tucson			Fresno		
Cap Rate	6.35%	5.35%	Cap Rate	5.85%	4.85%
ROC	6.85%	6.85%	ROC	4.32%	4.32%
IRR	13.91%	26.21%	IRR	0.00%	0.00%
EM	1.60x	2.19x	EM	0.22x	0.65x

8.2.2 Lesson 1 Recap

Clearly, tertiary markets’ returns are strongly dependent on cap rates and rent growth. SFR cap rates could swing advantageously if institutional money managers perceive the risk-adjusted returns of BTR SFR to be underpriced at current transacted valuations. If this happens, tertiary markets may become viable. Regarding rent growth, not all tertiary markets will experience lower growth rates as demonstrated in the case of Boise, Idaho, but tertiary markets in general will likely experience lower growth, constraining total returns.

8.3 Lesson 2: Different Single-Family Build-to-Rent Product Types May Be Better Suited to Different Markets

The demographic, economic and preference related tailwinds identified in Chapter 2 should support demand in any of the four BTR categories identified by John Burns Real Estate Consulting. However, some markets may be better suited to one of these BTR subtypes than the others. This section tests the “Cottage Homes” concept in both Oklahoma City and Tucson. The Avilla brand by NexMetro is an example of this product and pictures of NexMetro’s product are included in Appendix IV. The assumptions for Oklahoma City and Tucson are changed as follows:

1. 1,400 square feet per unit
2. 12 units/acre density (only 13.33 acres needed, rather than 20),
3. 20% lower lot development costs due to a more efficient site plan
4. \$0.93/sf rents for Oklahoma City and \$1.24/sf for Tucson
 - a. These rent numbers are nearly identical to these markets’ multifamily rents and seem reasonable because, while there are fewer amenities, they are detached and offer small yards.

Oklahoma City still has a residual value of \$0, although Tucson’s residual land value surpasses the market price by 44%, a significant margin. This shows that different product types may find better success in some markets than others.

Figure 39: Spectrum of Build-to-Rent [19].

Product Category	Typical Home Size Range		Typical Density (DU/Acre)
	Smallest	Largest	
"Cottage Homes" Small single-family detached and attached homes	650 sq. ft. 1 bd/1 ba	1,400 sq. ft. 3 bd/2 ba	12
Townhome and Duplex homes in two- to seven-unit building configurations	1,300 sq. ft. 2 bd/2 ba	1,750 sq. ft. 4 bd/2.5 ba	10
Traditional Single-Family detached homes on traditional lots	1,400 sq. ft. 3 bd/2 ba	2,000 sq. ft. 4 bd/3 ba	8
Luxury Single-Family detached homes on traditional lots	2,000 sq. ft. 3 bd/3 ba	2,800 sq. ft. 4 bd/3.5 ba	6

Figure 40: Oklahoma City BTR in Cottage Design (160 units of 1,400 square feet at 12 units/acre) Not Viable With 3.13% Rent Growth and 6.35% Cap Rate.

		Rent Growth Rate					
IRR:		1.50%	2.00%	2.50%	3.00%	3.50%	4.00%
Exit Cap Rate	11.13%	2.19%	4.51%	6.73%	8.86%	10.91%	12.90%
	6.50%	5.43%	7.62%	9.73%	11.76%	13.73%	15.64%
	6.25%	8.62%	10.70%	12.71%	14.66%	16.55%	18.39%
	6.00%	11.78%	13.77%	15.69%	17.57%	19.39%	21.18%
	5.75%	14.93%	16.84%	18.69%	20.50%	22.27%	24.00%
	5.50%	18.10%	19.93%	21.72%	23.47%	25.19%	26.87%
	5.25%	21.30%	23.07%	24.81%	26.51%	28.18%	29.82%
	5.00%						

Figure 41: Phoenix BTR in Cottage Design (160 units of 1,400 square feet at 12 units/acre) is Viable With 3.03% Rent Growth and 6.35% Cap Rate.

		Rent Growth Rate					
IRR:		1.50%	2.00%	2.50%	3.00%	3.50%	4.00%
Exit Cap Rate	20.63%	12.34%	14.21%	16.06%	17.89%	19.70%	21.50%
	6.50%	15.04%	16.91%	18.76%	20.59%	22.41%	24.21%
	6.25%	17.89%	19.76%	21.61%	23.44%	25.26%	27.05%
	6.00%	20.89%	22.76%	24.61%	26.44%	28.26%	30.06%
	5.75%	24.07%	25.93%	27.78%	29.62%	31.43%	33.23%
	5.50%	27.43%	29.30%	31.14%	32.98%	34.79%	36.59%
	5.25%	31.00%	32.86%	34.71%	36.54%	38.36%	40.15%
	5.00%						

8.4 HOI Implications

No clear conclusions can be drawn with regard to the viability of single-family BTR and the market's Housing Opportunity Index score. Oklahoma City had the most affordable market of the four case studies with a score of 80.1 and Fresno was the least affordable with a score of 39.9, yet both markets calculated a residual land value of \$0 under the base case assumptions. Phoenix and Tucson, both with middling scores of 69.5 and 63.9 respectively had the most potential, although Tucson worked only with a denser cottage design.

8.5 Further Research

One area of further research is indicated in Appendix I. The question is how to estimate the rent for a build-to-rent project in a market when there are no valid or even close comparables.

Further research could be conducted on HOI, land values and land value fractions to see whether any of these attributes are predictive of SFR BTR success.

Further research of the appropriate cap rate for SFR based on volatility would be of particular interest.

8.6 Conclusion on The Viability of Single-Family BTR in Tertiary Markets

Three tertiary markets, Oklahoma City, Tucson and Fresno, were compared to Phoenix using case studies in an attempt to assess the viability of single-family build-to-rent in tertiary markets. While none of these three tertiary markets proved viable under the specific base-case BTR product type examined (i.e. single-family detached homes on traditional lots), other BTR subtypes tested appeared more promising. Furthermore, it was found that BTR can be built at similar ROCs to Phoenix in certain tertiary markets, but lower population and job growth limit the potential for rent growth. This lower rent growth significantly constrains time-weighted returns. Relatedly, lower market growth rates and less investor interest in tertiary markets result in higher cap rates, with negative repercussions on exit valuations and the Internal Rate of Return and Equity Multiple. An important assumption in these case studies has been that exit cap rates were 25bps higher than comparable Class A multifamily rates. However, an argument can be made that SFR cap rates should in fact be lower due to lower SFR volatility; a reassessment of SFR cap rates would have a dramatic impact on the viability of SFR in all markets, tertiary markets included.

It should be noted that, while the simple answer to the question regarding the viability of BTR in tertiary markets is “no”, the real answer comes with significant qualifications, not only with regard to the BTR subtype, but also to the specific characteristics of the tertiary markets. As illustrated by Boise, Idaho, not all tertiary markets experience slow growth. Identifying these fast-growing cities may be the key to the success of BTR in tertiary markets.

9 Appendix I – Rent Comparisons and BTR Rent Projections

This appendix explains the methodology of the rent comparisons and how BTR rents were projected for the three case studies. It must be noted that this is an emerging product and data is sparse and thin. While the data may be limited, it does reasonably well predicting BTR success in Phoenix, where it has in fact been successful. In this context, conclusions are drawn that are broad, rather than specific and detailed.

First, an area is chosen for the hypothetical case studies. Examining Zillow and filtering by new home construction shows where new development in a metropolitan area is occurring. Logically, a concentration of new home activity suggests this particular area is in the path of growth and has the available land to assemble a theoretical twenty-acre parcel. Comps are looked for in this area (~3 miles) to maintain valid comparisons, although in a few cases, the distance may be increased to find a valid comp (~10 miles).

Next, rents for nearby single-family rental, single-family ownership and Class A multifamily properties are examined. As with all three of these comparisons, properties are chosen that are similar in nature and most likely to compete for the BTR case study project's renters. Starting with traditional, geographically dispersed SFR, homes are chosen that are relatively new and contain 3- and 4-bedrooms and 2- or 2.5-baths. These homes will have 2-car garages and a yard, although the yard may be slightly larger than the design calls for in the BTR project. Generally, these mom-and-pop rentals lack the community amenities a BTR project will offer. Gross rent and rent per square foot are calculated.

The second product type is Class A multifamily. A similar protocol is followed whereby nearby properties are located based on their age. Generally, properties can be found that have been built in the current real estate cycle. These units often offer a few 3-bedroom, 2-bath units and are generally sized around 1,250 square feet. Some units offer attached garages for an extra fee and others do not. To maintain consistency, no fees for garages were built-in. Instead, these units are deemed to lack garages and this difference is accounted for qualitatively.

The final comparison is to the cost of single-family ownership. The properties chosen are the single-family rental properties and for the sale price Zillow's Zestimate is used. The median error rate on these estimates is only 1.9% according to Zillow [52]. These homes are used because they are entry-level type homes that a potential homebuyer deciding between the BTR project and homeownership would consider. Calculating this comp is more difficult as there are numerous assumptions. Pulling different levers can significantly alter the monthly housing cost. The intent is to view the rent vs. own decision through the eyes of the target consumer. In this case, as illustrated in Chapter 2, the target consumer is likely a first-time homebuyer with a growing family and some student debt. As such, down payments are a hurdle.

The 3.5% down payment, 30-year fully amortizing, fixed-rate mortgage is used to calculate the down payment. At the time of writing, interest rates on these loans are approximately 3.875% [35]. This monthly payment calculation only includes the principal and interest payment. An

estimate of 2% of the sales price is added for taxes and hazard insurance. The average vintage of these units is 2011 – not an insignificant difference to a hypothetical brand new 2019 unit. Repairs and maintenance are the responsibility of the homeowner, whereas the landlord pays them in a rental unit; these costs are estimated to be \$50/month. HOA fees are pulled from Zillow (average \$33/mo) and PMI (average \$165/mo) is estimated at 0.75% of the sales price [35].

With comparable rental rates in hand, a rent for a build-to-rent single-family project can be projected in these markets where no BTR comps exist. One way this may be done is by observing the hierarchy of rents and replicating that in the tertiary, case study markets. For example, these are the observed rents in Phoenix:

	Rent Per Square Foot							
	MF	>	SFO	>	BTR	>	SFR	
Phoenix (Observed in Market)	\$ 1.24	3%	\$ 1.21	9%	\$ 1.11	6%	\$ 1.05	

However, when observing rents and ownership costs in different markets, there is no ordained hierarchy of costs. To wit, in Phoenix single-family ownership is more expensive than mom-and-pop single-family rentals. However, the opposite is true in Oklahoma City.

In a simple world, there would be a well-documented hierarchy. For example, as a rule, multifamily might be 10% more expensive per square foot than SFR which is 5% less expensive per square foot than the all-in monthly cost of single-family ownership. While there are no guaranteed rules, there are some general guidelines that can be observed in the rent comparisons for these four markets. With four markets (Phoenix, Oklahoma City, Tucson and Fresno) and three product types (single-family ownership, SFR and MF) and two rent metrics (gross and per square foot) there are 24 possible permutations of comparisons. In these 24 permutations, general rules can be observed as there are only five cases that differ from the rule (and one tie).

Permutations:

	Monthly Rent	Per SF
Multifamily < Single-Family Rental	3/4	1/4
Multifamily < Single-Family Ownership	4/4	1/3*
SFR < SF Ownership	3/4	3/4
Number of Observations	12	11
		* 1 tie
General Trend	SFO > SFR > MF MF > SFO > SFR	

These trends can be quantified as follows:

Gross Rent					
	SFO	>	SFR	>	MF
Phoenix	\$ 1,945.97	18%	\$ 1,652.40	-6%	\$ 1,748.60
Oklahoma City	\$ 1,703.80	-3%	\$ 1,752.00	58%	\$ 1,109.33
Tucson	\$ 2,196.12	23%	\$ 1,788.00	15%	\$ 1,558.67
Fresno	\$ 1,991.86	19%	\$ 1,678.00	15%	\$ 1,460.00
Average		14%		21%	

Rent Per Square Foot					
	MF	>	SFO	>	SFR
Phoenix	\$ 1.24	3%	\$ 1.21	15%	\$ 1.05
Oklahoma City	\$ 0.92	-1%	\$ 0.92	-4%	\$ 0.96
Tucson	\$ 1.24	15%	\$ 1.08	23%	\$ 0.88
Fresno	\$ 1.17	-2%	\$ 1.19	18%	\$ 1.01
Average		4%		13%	

The cases that “go against the rule” are observed as negatives. While there is some variation, a general trend can be quantified as the average of the premiums.

In order to estimate BTR rents in pioneering markets, it must be recognized that observed rents and monthly costs for existing product types such as single-family ownership, SFR and MF are the result of a complex interplay of supply & demand as consumers weigh cost differences with qualitative differences. Respecting that the market (and observed costs) is correct in these assessments, it must be realized that a rent cannot be imposed on a market. Instead, the market dictates the rent. The question becomes, “How can a rent be estimated when there is no BTR product in a market and therefore no existing comps?” One way, as mentioned in a previous chapter, would be to deconstruct all possible attributes of a housing structure (square feet, cabinetry finishes, lot size, proximity to neighbors, density, attached/detached status, maintenance obligations, community amenities, etc.) and create a linear or logarithmic regression. However, this is outside the scope of this paper. Instead, the rent value is solved by minimizing the sum of the square of the differences between this rent value per square foot and the other product types. This value is then compared to the rent premiums and rent hierarchy for all four product types as observed in Phoenix as a “double check”.

An illustration is in order; Oklahoma City’s comps will be used. The pertinent number of 0.007270324, bolded in the chart below, is the sum of the three numbers above it. The numbers above are calculated by subtracting its Per Square Foot number from the Projected SF number and squaring it (to make it positive). Microsoft Excel’s Solver function is used to minimize the sum by solving for a OKC SFR BTR rent. Figure 42 shows a rent number that is too low, Figure 43 shows a number too high and Figure 44 shows the solved for value that minimizes the sum of the square of the differences. As can be seen, the sum of the squares of the differences is lowest in Figure 44.

Figure 42: Projected BTR Rent Too Low

THREE BEDROOM SUMMARY - OKLAHOMA CITY						
Type	Rent	Sq Ft	Per Sq Ft	Bed	Bath	Least Sum of Square of Differences
Projected OKC SFR BFR	\$ 1,600.00	1,800	\$ 0.89	3	2	N/A
Single-Family Ownership	\$ 1,703.80	1,853	\$ 0.92	3	2.1	0.001227626
Single-Family Rental	\$ 1,752.00	1,853	\$ 0.96	3	2.1	0.005134842
Multifamily	\$ 1,109.33	1,213	\$ 0.92	3	2	0.000907856
						0.007270324

Figure 43: Projected BTR Rent Too High

THREE BEDROOM SUMMARY - OKLAHOMA CITY							<u>Least Sum of Square of Differences</u>
<u>Type</u>	<u>Rent</u>	<u>Sq Ft</u>	<u>Per Sq Ft</u>	<u>Bed</u>	<u>Bath</u>		
<i>Projected OKC SFR BFR</i>	<i>\$ 1,700.00</i>	<i>1,800</i>	<i>\$ 0.94</i>	<i>3</i>	<i>2</i>	N/A	
Single-Family Ownership	\$ 1,703.80	1,853	\$ 0.92	3	2.1	0.000420991	
Single-Family Rental	\$ 1,752.00	1,853	\$ 0.96	3	2.1	0.000259283	
Multifamily	\$ 1,109.33	1,213	\$ 0.92	3	2	0.000646426	
						0.001326699	

Figure 44: Projected BTR Rent That Minimizes the Sum of the Square of the Differences Between Per Square Foot Costs of Different Product Types Compared to BTR

THREE BEDROOM SUMMARY - OKLAHOMA CITY							<u>Least Sum of Square of Differences</u>
<u>Type</u>	<u>Rent</u>	<u>Sq Ft</u>	<u>Per Sq Ft</u>	<u>Bed</u>	<u>Bath</u>		
<i>Projected OKC SFR BFR</i>	<i>\$ 1,682.10</i>	<i>1,800</i>	<i>\$ 0.93</i>	<i>3</i>	<i>2</i>	N/A	
Single-Family Ownership	\$ 1,703.80	1,853	\$ 0.92	3	2.1	0.000111749	
Single-Family Rental	\$ 1,752.00	1,853	\$ 0.96	3	2.1	0.000678559	
Multifamily	\$ 1,109.33	1,213	\$ 0.92	3	2	0.000239568	
						0.001029876	

Next, these solved for rents are compared to the observed rent premiums in Phoenix, including Phoenix’s observed BTR rent premium. It can be seen that while the estimated rents do not perfectly follow the Phoenix hierarchy, they are reasonably close. It is also noted, again, that it is impossible to follow the Phoenix hierarchy as each market is unique.

Figure 45: Actual Observed Comps Without BTR Estimates.

Gross Rent					
	SFO	>	SFR	>	MF
Phoenix	\$ 1,945.97	18%	\$ 1,652.40	-6%	\$ 1,748.60
Oklahoma City	\$ 1,703.80	-3%	\$ 1,752.00	58%	\$ 1,109.33
Tucson	\$ 2,196.12	23%	\$ 1,788.00	15%	\$ 1,558.67
Fresno	\$ 1,991.86	19%	\$ 1,678.00	15%	\$ 1,460.00
Average		14%		21%	

Rent Per Square Foot					
	MF	>	SFO	>	SFR
Phoenix	\$ 1.24	3%	\$ 1.21	15%	\$ 1.05
Oklahoma City	\$ 0.92	-1%	\$ 0.92	-4%	\$ 0.96
Tucson	\$ 1.24	15%	\$ 1.08	23%	\$ 0.88
Fresno	\$ 1.17	-2%	\$ 1.19	18%	\$ 1.01
Average		4%		13%	

Figure 46: Observed Comps with BTR Estimates:

Gross Rent							
	SFO	>	BTR	>	SFR	>	MF
Phoenix (Observed in Market)	\$ 1,945.97	4%	\$ 1,876.00	14%	\$ 1,652.40	-6%	\$ 1,748.60
Oklahoma City (Estimated BTR)	\$ 1,703.80	1%	\$ 1,682.10	-4%	\$ 1,752.00	58%	\$ 1,109.33
Tucson (Estimated BTR)	\$ 2,196.12	4%	\$ 2,132.01	19%	\$ 1,788.00	15%	\$ 1,558.67
Fresno (Estimated BTR)	\$ 1,991.86	5%	\$ 1,907.62	14%	\$ 1,678.00	15%	\$ 1,460.00
Average		4%		11%		21%	

Rent Per Square Foot							
	MF	>	SFO	>	BTR	>	SFR
Phoenix (Observed in Market)	\$ 1.24	3%	\$ 1.21	9%	\$ 1.11	6%	\$ 1.05
Oklahoma City (Estimated BTR)	\$ 0.92	-1%	\$ 0.92	-1%	\$ 0.93	-3%	\$ 0.96
Tucson (Estimated BTR)	\$ 1.24	15%	\$ 1.08	1%	\$ 1.07	22%	\$ 0.88
Fresno (Estimated BTR)	\$ 1.17	-2%	\$ 1.19	6%	\$ 1.12	11%	\$ 1.01
Average		4%		4%		9%	

10 Appendix II – Higley Park Pictures





11 Appendix III – Financial Analysis Assumptions and Methodology

This appendix describes the methodology, inputs and assumptions of the financial model used to calculate the financial returns. The first section describes the inputs that do not vary among the different case studies and the second section describes those that do.

Constant Inputs

All cases are run with a certain set of assumptions that do not vary among the different cities. It must be noted that this product type is pioneering and the data is not as deep or wide as preferred. Nevertheless, it is sufficient to draw broad conclusions.

- Acreage: Twenty-acre parcel developed at 8 units per acre for 160 total units. A minimum size must be built to allocate the community amenities in an efficient way and 160 units is assumed to be sufficient to defray the cost of the parks, playgrounds and pools, but not so high as to weigh on returns due to slow absorption. As seen in Figure 18: Spectrum of Build-to-Rent, this 8-dwelling unit/acre average is exactly equal to the average of the traditional single-family category of BTR.
- Pre-Acquisition/Transaction Costs: \$250,000 for architecture, design, planning, etc. Project land costs are assumed to be fully entitled single-family and no re-zonings are needed.
- Land Development Start Date: Construction is assumed to begin 3 months after incurring land acquisition and pre-development costs.
- Land Development Schedule: 11.89 months is the estimated time to complete the horizontal land development (excavation, utilities, paving, etc.).
- Build Cycle per Home: 6 months.
- Vertical Construction Units Started Per Month: 12 units/month. Unlike a traditional single-family housing development where lots are taken down in a near-haphazard order, these units are built out on an efficient production schedule, similar to an apartment complex.
- Lease-Up Start Date: Month 14. Land development is finished and the first housing units begun in month 8 are becoming available. This is an aggressive assumption as people tend to have an aversion to living in communities under construction and are not likely to pay full price rents as the developer offers concessions to lease-up the property, but this assumption is accepted for the sake of simplicity.
- Operating Expense Ratio: 33%. In-fact, this number will vary by market due to property taxes, among other things. Nevertheless, for simplicity, it is left constant.
- Operating Expense Inflation: 2%.
- Soft Costs: 35% calculated on direct vertical costs.
- Construction Loan Loan-to-Cost: 65%
- Interest Rate on Construction Loan: 5.5%
- Origination Fees on Construction and Permanent Loan: 1%
- Takeout Financing Schedule: 6 months after stabilization.
- Permanent Financing Loan-to-Value: 65%
- Interest Rate on Permanent Loan: 5%

- Construction Cost Inflation: 4%.
- Sales Cost: 3% of gross sales price.
- Deal Fees: 4% of horizontal and vertical construction costs to developer/operator expensed concurrently and in proportion to incurred construction costs. Income from deal fees are not included in the financial returns analyzed.
- Sale: Month 60 with a selling cost of 3% on gross proceeds.

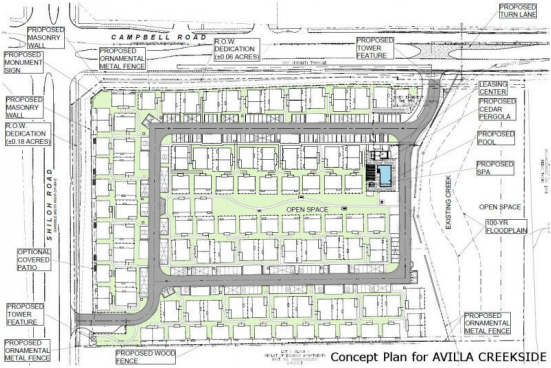
Market Unique Inputs

These pro forma inputs vary market-by-market as explained in each case study's respective chapter.

- Absorption Schedule: Because there are no comparable BTR projects to compare, absorption must be estimated. Absorption was estimated by comparing the number of homes sold in nearby for-sale, entry-level housing subdivisions.
 - Phoenix – Magma Ranch, LGI Homes, Price Point - \$200,000, closings per month of 10 is used to estimate monthly leasing absorption.
 - Oklahoma City – Falling Springs, D.R. Horton, Price Point - \$220,000, closings per month of 4 is used to estimate monthly leasing absorption.
 - Tucson – Cantera, LGI Homes, Price Point - \$207,900, closings per month of 8 is used to estimate monthly leasing absorption.
 - Fresno – Daffodil Hills, Lennar Homes, Price Point – “high 200’s”, closings per month of 5 is used to estimate monthly leasing absorption.
- Average Rental Rate: See Appendix I.
- Rent Growth: A SFR BTR developer underwrites a 4% rental growth rate in fast-growing Phoenix. With household growth and job growth of 1.93% and 3.23%, rents will grow faster than in slower growing tertiary markets. According to the American Community Survey, rent growth median gross rent great at a compound annual growth rate (“CAGR”) of 2.46% from 2012 – 2017. To calculate tertiary BTR rent growth, the 2012 – 2017 CAGR of the tertiary markets is divided by the same measure for Phoenix to get a ratio. This ratio is applied to the 4% BTR rental growth rate.
 - Oklahoma City: 2012 – 2017 CAGR of gross median rent of 1.93%. $1.93\%/2.46\% = 78\%$. This times 4% BTR growth = an expected growth rate of 3.13%.
 - Tucson: 2012 – 2017 CAGR of gross median rent of 1.86%. $1.86\%/2.46\% = 75\%$. This times 4% BTR growth = an expected growth rate of 3.02%.
 - Fresno: 2012 – 2017 CAGR of gross median rent of 1.93%. $1.53\%/2.46\% = 62\%$. This times 4% BTR growth = an expected growth rate of 2.5%.
- Exit Cap Rate: December 2017 RCA cap rates for Class A MF for less 30 basis points due to decreased 10-year bond rates of 30 basis points from December 2017 to July 16, 2019 [53]. This adjusted cap rate for Class A MF is then discounted by 25 basis points because single-family build-to-rent is an emerging product and transacted values in Phoenix are 25 basis points higher than comparable Class A MF cap rates in that market [36].
 - Phoenix: 2017 Class A – 30 bps + 25 bps = 5.6% - 0.3% + .025% = 5.55%
 - Oklahoma City: 2017 Class A – 30 bps + 25 bps = 6.4% - 0.3% + .025% = 6.35%
 - Tucson: 2017 Class A – 30 bps + 25 bps = 6.4% - 0.3% + .025% = 6.35%
 - Fresno: 2017 Class A – 30 bps + 25 bps = 5.9% - 0.3% + .025% = 5.85%

- Cap Rate for Permanent Loan Valuation: The same cap rate is used as the exit cap rate.
- Land Basis: Market values for land prices were obtained from local real estate brokers who transact similar parcels. The quoted property was a 20-acre unit entitled for 160 units with no offsite requirements near current new home development.
 - Phoenix: \$11/sf
 - Oklahoma City: \$1.50/sf
 - Tucson: \$6/sf
 - Fresno: \$8/sf
- Vertical Construction Cost per SF: Construction costs for homes in Phoenix are given from an active BTR developer in Phoenix. This number, excluding soft costs, is \$60/sf. A template for a similar 2,000 square foot, 2-story home in Mesa/Tempe, Arizona is constructed in RS Means. The developer's estimate of \$60/sf is less than the RS Means estimate of \$76.46/sf. Indeed, the developer value is 78% of the value of the estimate. This difference is attributed to the crude nature of the RS Means estimate. The developer estimate is deemed more detailed and accurate so \$60/sf price is used for Phoenix and the prices for the other metros are calculated by multiplying the RS Means estimate by 78%.
 - Phoenix: \$60/sf
 - Oklahoma City: \$83.19/sf direct costs per RS Means times 78% = \$64.89/sf
 - Tucson: \$75.74/sf direct costs per RS Means times 78% = \$59.08/sf
 - Fresno: \$121.46/sf direct costs per RS Means times 78% = \$94.74/sf
- Land Development Cost per Lot: Sourced from civil engineers or land developers in the respective markets.
 - Phoenix: \$30,000/lot
 - Tucson: \$35,000/lot
 - Oklahoma City: \$25,000/lot
 - Fresno: \$60,000/lot

12 Appendix IV – Avilla Brand “Cottage Home” Pictures



13 Bibliography

- [1] “Single-Family Rental Primer,” Green Street Advisors, Jun. 2016.
- [2] C. K. Reid, “The Rise of Single-Family Rentals after the Foreclosure Crisis,” Turner Center, Berkeley, CA, Apr. 2018.
- [3] V. Baulerlain, “American Suburbs Swell Again as a New Generation Escapes the City,” *Wall Street Journal*, 01-Jul-2019.
- [4] “United States Home Ownership Rate,” *Trading Economics*. [Online]. Available: <https://tradingeconomics.com/united-states/home-ownership-rate>. [Accessed: 12-Jul-2019].
- [5] “The State of the Nation’s Housing 2019,” Joint Center for Housing Studies of Harvard University, 2019.
- [6] “State of the Nation’s Housing 2019,” Joint Center for Housing Studies of Harvard University, 2019.
- [7] S. Brown, “Texas, U.S. construction is headed for a slowdown,” *Dallas News*, 21-Jun-2019. [Online]. Available: <https://www.dallasnews.com/business/real-estate/2019/06/21/texas-us-construction-headed-slowdown>. [Accessed: 12-Jul-2019].
- [8] J. Burns, “US Housing Market Outlook,” John Burns Real Estate Consulting, Aug. 2018.
- [9] M. Boesel, “U.S. Delinquency Rates At- Or Near-Record Lows, But Late Payments Spike in Some Hurricane Areas,” *CoreLogic Insights Blog*, 08-Jan-2019. .
- [10] “U.S. Single-Family Rental – An Emerging Institutional Asset Class,” Amherst Capital Management, New York, NY, Nov. 2016.
- [11] C. S. Rugaber, “Pay Gap Between College Grads and Everyone Else at a Record,” *USA Today*, 12-Jan-2017. [Online]. Available: <https://www.usatoday.com/story/money/2017/01/12/pay-gap-between-college-grads-and-everyone-else-record/96493348/>. [Accessed: 12-Jul-2019].
- [12] K. Bialik and R. Fry, “How Millennials Compare With Prior Generations,” *Pew Research Center*. .
- [13] L. Shansey, “Linear Living: The Rise of Single- Family Rentals,” *Multifamily Executive*, 29-Jan-2018. [Online]. Available: https://www.multifamilyexecutive.com/property-management/apartment-trends/linear-living-the-rise-of-single-family-rentals_o.
- [14] A. Crippen, “Warren Buffett on Squawk Box,” 27-Feb-2012.
- [15] B. Greiwe, “The Institutionalization of an Emerging Asset Class: The Origin Story of Invitation Homes,” *Medium*, 10-Aug-2017. [Online]. Available: <https://medium.com/fifth-wall-insights/the-institutionalization-of-an-emerging-asset-class-the-origin-story-of-invitation-homes-1f949603a231>. [Accessed: 12-Jul-2019].
- [16] J. Burns, “Burns Single-Family Rental Analysis and Forecast,” John Burns Real Estate Consulting, Jun. 2019.
- [17] R. Dezember and Timiaros, “Blackstone Wins Fannie’s Backing for Rental Home Debt,” *The Wall Street Journal*, 24-Jan-2017. [Online]. Available: <https://www.wsj.com/articles/blackstone-wins-fannies-backing-for-rental-home-debt-1485265237>. [Accessed: 12-Jul-2019].
- [18] L. Fu, “Tricon Launches \$750m JV for Single-Family Rentals,” *PERE*, 03-Jul-2018. .
- [19] D. Walker, “Single-Family Rental Industry Act 2: Build-to-Rent Taking Center Stage,” *John Burns Real Estate Consulting*, 21-May-2018. .
- [20] B. Mattson-Teig, “Single-Family Rental Investors Make Bigger Bets on Build-to-Rent Homes,” *National Real Estate Investor*, 22-Jan-2019. [Online]. Available:

- <https://www.nreionline.com/single-family-rentals/single-family-rental-investors-make-bigger-bets-build-rent-homes>. [Accessed: 12-Jul-2019].
- [21] J. Andrews, “A Brand New Single-Family Neighborhood, Where Every Unit is a Rental,” *Curbed*, 10-Sep-2018. [Online]. Available: <https://www.curbed.com/2018/9/10/17824802/single-family-rental-communities>. [Accessed: 12-Jul-2019].
- [22] “List of Metropolitan Statistical Areas,” *Wikipedia*. 11-Jul-2019.
- [23] R. Wiles, “Arizona Economy: Big gains Expected in Employment, Population,” *AZ Central*, 03-Aug-2018. [Online]. Available: <https://www.azcentral.com/story/money/business/jobs/2018/08/03/arizona-economy-big-gains-expected-employment-population/891338002/>. [Accessed: 12-Jul-2019].
- [24] “U.S. Census Bureau QuickFacts: Phoenix, Arizona.” [Online]. Available: <https://www.census.gov/quickfacts/phoenixcityarizona>. [Accessed: 12-Jul-2019].
- [25] “Educational Attainment in the United States,” *Wikipedia*. 22-Jun-2019.
- [26] “Phoenix MSA,” *Wikipedia*. 10-Jul-2019.
- [27] G. Hammond, “Arizona’s Economy: Still Strong After All These Years,” *Arizona’s Economy*, 30-May-2019. .
- [28] M. Schurman, “Lots of Help Wanted: How the Labor Shortage is Slowing the Texas Economy,” *Dallas Morning News*, 30-Jun-2019. [Online]. Available: <https://www.dallasnews.com/opinion/commentary/2019/06/30/help-wanted-labor-shortage-slowing-texas-economy>. [Accessed: 12-Jul-2019].
- [29] U.S. Federal Housing Finance Agency, “All-Transactions House Price Index for Phoenix-Mesa-Chandler, AZ (MSA),” *FRED, Federal Reserve Bank of St. Louis*. [Online]. Available: <https://fred.stlouisfed.org/series/ATNHPIUS38060Q>. [Accessed: 12-Jul-2019].
- [30] “S&P/Case-Shiller U.S. National Home Price Index,” 25-Jun-2019. [Online]. Available: <https://fred.stlouisfed.org/series/CSUSHPINS>. [Accessed: 12-Jul-2019].
- [31] “Gilbert, AZ | Data USA,” *Data USA*. [Online]. Available: <https://datausa.io/profile/geo/gilbert-az/>. [Accessed: 12-Jul-2019].
- [32] “Phoenix, AZ | Data USA,” *Data USA*. [Online]. Available: <https://datausa.io/profile/geo/phoenix-az/>. [Accessed: 12-Jul-2019].
- [33] “United States Home Prices & Home Values,” *Zillow*. [Online]. Available: <https://www.zillow.com/443/home-values/>. [Accessed: 12-Jul-2019].
- [34] Mark Taylor Residential, “Higley Park Details.” [Online]. Available: <https://www.mark-taylor.com/apartments/az/gilbert/bb-living-at-higley-park/amenities>. [Accessed: 12-Jul-2019].
- [35] Zillow, Inc., “What is an FHA Loan? - Complete Guide to FHA Loans | Zillow,” *Mortgage Learning Center*, 12-May-2017. .
- [36] (Confidential), “Confidential Interview with Phoenix BTR Developer,” 08-Jul-2019.
- [37] “Real Capital Analytics 2017 Cap Rates,” Real Capital Analytics, Dec. 2017.
- [38] W. French, “Interview,” 12-Jul-2019.
- [39] “Housing Opportunity Index (HOI),” *National Association of Home Builders*. [Online]. Available: <https://www.nahb.org/443/research/housing-economics/housing-indexes/housing-opportunity-index.aspx>. [Accessed: 13-Jul-2019].
- [40] “U.S. Census Bureau QuickFacts: United States.” [Online]. Available: <https://www.census.gov/quickfacts/fact/table/US/PST045218>. [Accessed: 12-Jul-2019].

- [41] “Comprehensive Housing Market Analysis: Oklahoma City,” U.S. Department of Housing and Urban Development, Apr. 2016.
- [42] Confidential, “Interview with OKC Residential Real Estate Developer,” 01-Jul-2019.
- [43] U.S. Census Bureau, “American FactFinder - Results for Gross Median Rent.” [Online]. Available:
<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.
[Accessed: 17-Jul-2019].
- [44] *RS Means Online*. 2019.
- [45] U.S. Bureau of Economic Analysis, “Total Real Gross Domestic Product for Tucson, AZ (MSA),” *FRED, Federal Reserve Bank of St. Louis*, 01-Jan-2001. [Online]. Available:
<https://fred.stlouisfed.org/series/RGMP46060>. [Accessed: 12-Jul-2019].
- [46] “Tucson, Arizona,” *Wikipedia*. 09-Jul-2019.
- [47] “Interview with Land Advisors Organization,” 12-Jul-2019.
- [48] “Metropolitan Fresno,” *Wikipedia*. 18-Jun-2019.
- [49] “Best Places to Live | Compare cost of living, crime, cities, schools and more.,” *Sperling’s BestPlaces*. [Online]. Available: <https://www.bestplaces.net>. [Accessed: 21-Jul-2019].
- [50] C. Graham, “Interview,” 12-Jul-2019.
- [51] Geltner, David, Clayton, Jim, Miller, Norman, and Eichholtz, Pete, *Commerical Real Estate: Analysis and Investments*, 3rd ed. OnCourse Learning.
- [52] Zillow, Inc., “What is a Zestimate? Zillow’s Zestimate Accuracy,” *Zillow*. [Online]. Available: <https://www.zillow.com:443/zestimate/>. [Accessed: 13-Jul-2019].
- [53] US Treasury, “Daily Treasury Yield Curve Rates.” [Online]. Available:
<https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield>. [Accessed: 17-Jul-2019].