# THE YOUNG ADULT HOMEOWNERSHIP CRISES IN THE US AND DENMARK: THE ROLE OF INNOVATION IN THE HOUSING MARKET

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**Authors**:

Edith H Atakpa (105174), Organizational Innovation and Entrepreneurship

Nick Villemoes Hall (114355), International Business

**Supervisor**: Sudhanshu Rai, Associate Professor, CBS

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**Abstract**

This paper seeks to understand the causes of and potential remedies to the challenges facing young adults who are trying to become homeowners in the US and Denmark. On the housing demand side, it considers long-term national-level data in four categories: state influence, economic and financial indicators, labor market factors, and socio-demographic trends. These findings, which are similar for both countries, support existing studies that argue that young adults are increasingly unable to become homeowners. These trends persist through the years following the financial crash, indicating that young adults' needs in the housing market are not being met. The growing population rates in metropolitan areas and regional house price variation suggest that the housing problems are magnified on regional and city levels. Interviews with representatives and experts from the housing and construction industries in both countries serve as the local perspectives and guide the supply-side discussion. On the supply side current innovations are discussed as potential solutions to address the growing shortage of affordable housing units. However, the benefits and wide-scale application of these technologies are disputed, primarily due to governments, financing restrictions, opposition from local communities, and the structure of the housing sector. Final recommendations to support young adults in becoming homeowners are given, which incorporate innovation and address the complexities of the current market landscape.

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# 1. INTRODUCTION

## 1.1 THE YOUNG ADULT HOMEOWNERSHIP CRISIS

The goal of increasing homeownership levels has become more common around the world in recent decades, which symbolizes a movement of states reducing their social welfare responsibilities and shifting them to individuals and the free market (Arundel, 2017; Conley & Gifford, 2006). Relatedly, there has been a dramatic rise in literature analyzing the drivers of homeownership based on the demand of homes from the consumer perspective, as well as the supply of housing stock regulated by the government. Homeownership in the context of social insurance is particularly important because homeownership is the largest component of individual wealth and is one of the most effective forms of private insurance, especially in the absence of expansive public welfare systems (Andersen, 2012; Arundel, 2017). Additionally, despite multiple bubbles over the last 50 years, homes make for solid investments in the long-run due to their rising prices and the declining real and absolute costs of a mortgage over its lifespan (Aalbers, 2016; Conley & Gifford, 2006; Whitehead & Williams, 2011).

While the Global Financial Crash (GFC) exacerbated the existing problems in the housing market, Forrest and Hirayama (2009) show that the homeownership rates of young adults (under the age of 34) had been declining in countries, including the US and Denmark, that implemented neoliberal (i.e., supporting the free market and privatization) housing policies in the 20 years leading up to the market collapse. Nonetheless, the disparity between early- and non-homeowners became even more apparent in the aftermath of the great recession as now, more than ever, it is difficult for first-time homebuyers (Albertini, Kohli, & Vogel, 2007; Arundel, 2017; Mulder, Dewilde, van Dujin, & Smits, 2015). This is in large part due to stricter lending practices, economic instability, and labor market insecurity (Arundel, 2017; Arundel & Doling, 2017; Bardhan, Edelstein, & Kroll, 2011; Lennartz, Arundel, & Ronald, 2016). Long-standing homeowners are more likely to have paid off a larger share of their mortgages and have other assets and savings to survive a downturn. Conversely, Forrest and Yip (2012) note that the most vulnerable are "typically younger households, on lower incomes, buying the most marginal properties and stretch themselves to the limit to get a foot on the last rung of the property ladder before it is raised beyond their reach" (p. 7).

Moreover, following downturns, credit typically becomes available at attractive rates – combined with low yields on other investment opportunities and property prices on the rebound – purchasing another home is an appealing option, at least for households with existing wealth (Arundel & Doling, 2017; Forrest & Hirayama, 2015). As a result, home prices rise, assets concentrate in the hands of the already wealthy, and non-homeowners flock to the rental market (Kemp, 2015). While renting is classically seen as a stepping-stone toward homeownership, evidence indicates that renting decreases rather than increases saving and investment potential (Arundel, 2017; Forrest & Hirayama, 2015). At the same time, rental rates are increasing, especially for young adults, in both the US and Denmark in recent years. Combined with the decrease in support – both financially and as socially accepted form of living – for social housing, these families are increasingly falling behind the rest of the population (Kemp & Keoghan, 2001; Priemus & Dieleman, 2002; Scanlon, Fernández Arrigoitia, Whitehead, 2015).

While the demand for homeownership is growing, the supply of housing is not rising at the same rate, which is the simple explanation for why rental and owner-occupied properties are becoming less affordable. Construction of owner-occupied rather than rental properties, a trend towards liberalizing the rental market, and efforts to decommodify public housing all suggest Denmark is attempting to grow homeownership at the expense of other housing types (Larsen & Lund Hansen, 2015; Sørvoll & Bengtsson, 2018). In the US, the recent financial crash dampened production in the construction industry and it is only now recovering. As well, both countries are experiencing massive growth in their metropolitan cities, areas which are more difficult to build in because of land availability and geographical barriers. Innovations in technology and manufacturing processes have the capacity to change cities and could potentially alleviate the problems in the housing market (Hall, 1998). Yet, after failed attempts to promote innovation in the construction industry in the 1960s, advancements in the sector have seemingly stagnated and today the industry seems resistant to change (Hasell et al., 2003; Koebel, 1999).

In summation, the countries' shift toward becoming homeownership societies at the expense of other forms of living is in direct odds with the current economic situation, governmental policies, and social realities facing young adults who are now trying to become homeowners. Homeownership opportunities are inherently linked to other forms of living and are driven by both supply and demand factors. Although the desire to become homeowners is unchanged for young adults, their ability to achieve this dream is increasingly being restricted. In order to achieve the goal to provide affordable housing to young adults, we must look at construction firms, examine how operate, and understand what motivates them to innovate. We are trying to find the importance of construction companies balance the supply against the demands and innovate to consumer needs, which in this case are young adults.

## 1.2 RESEARCH QUESTIONS

The drivers of the young adult homeownership crisis are varied and interconnected. In order to further understand the scope and nature of these problems, a comparative study of two countries is in order. As alluded to in the introduction, the purpose of this thesis can be summarized by the following research question:

What are the contexts driving the young adult homeownership problems in the US and Denmark and how can innovation in the housing market address these issues?

To further examine the phenomena, the following sub-questions will also be explored:

- How can the drivers be separated into factors on the demand for homes side and the supply of housing side?
- Are the problems facing young adults in the homeownership market becoming more severe in recent decades?
- How are these challenges and the potential solutions in the two countries similar and how are they different?
- What is the role of innovation in alleviating the problems facing young adult homebuyers?
- What are the structural limitations and challenges in the housing market that restrict innovation development?

## 1.3 STRUCTURE

The rest of the paper begins with a brief background on the housing markets in the US and Denmark. Key features and differences between the two are expanded upon. The housing markets and the challenges facing young adults who are trying to become homeowners in these two selected countries represent the core focus of this paper. The literature review begins with a short summary of the early literature discussing homeownership before proceeding to more recent and relevant studies that analyze the drivers of young adult homeownership rates around the world. These various and interrelated perspectives are segmented and mapped based on their prevalence and whether they affect the supply of or demand for housing. Importantly, the supply of housing in relation to young adult homeownership is underrepresented, as is the role of innovation. Those two topics serve as points of study for this paper.

The data and methodology section outlines the data collected and the method with which they were analyzed. The section is segmented into two parts: the demand for and supply of housing. Following that, a number of limitations to the paper are highlighted. The analysis section begins with the demand-side perspective that is segmented into five parts and compares the two countries based on long-term quantifiable trends. Then, the supply-side perspective is given with special emphasis given to the role of innovation and presents local solutions to the housing problems based on interviews with companies and industry experts.

Next, a discussion of the findings is given both for the demand and supply sides. After the individual segments, an overall discussion summarizes the main discoveries and presents arguments that incorporate the two sides of the housing market. Then, a short conclusion is given, which addresses the initial research question. Lastly, implications for further academic research and relevant industries are offered.

## 2. BACKGROUND ON THE HOUSING MARKETS

Although housing markets can be characterized by numerous features, the following section provides background on three key attributes. These three are highlighted to give background on the differences between the two distinct housing markets. The first characteristic, social housing, relates to the supply of housing stock; the next two, housing allowances and the mortgage market, affect the demand for housing. All three are national-level drivers of an individual's decision to choose one housing type, such as homeownership, over others.

## 2.1 SOCIAL HOUSING

One of the key differences between the two countries' housing markets is the prevalence and robustness of the social housing sector. In Denmark, common housing or not-for-profit (*alemeneboliger*) make up around 20 percent of total housing stock (OECD, 2017b). The principal provider of social rental housing is not-for-profit and co-operative providers, with another 23,000 units let by municipal authorities. In comparison, social housing (known as public or supportive housing) is less than five percent of the total housing stock in the US (Salvi del Pero, Adema, Ferraro, & Frey, 2016). As well, the federal government subsidizes the service, which is then provided primarily by for-profit and individual providers, as well as regional and municipal authorities and public agencies (OECD, 2016c). Within the realm of social housing, affordable housing is generally defined as housing costs that do not exceed 30 percent of a household's gross income.

Using a composite indicator from zero to six to measure the strength of rent controls, the US scores a five in the social housing sector, making it one of the most regulated countries, and Denmark is a 3.5. However, in the private rental market, the US is one of the least regulated at .67, while Denmark is on the higher end of the spectrum with a three (Andrews, Caldera Sánchez, & Johansson, 2011). Lastly, in Denmark, local agencies can prioritize families, homeless people, or students on the waiting list to increase social diversity in the dwellings. Further differences are given in the table below.

Table 1
*Key attributes of the social housing sector*

| Country | Eligibility criteria | Rent setting system | Rent increase system |
|---|---|---|---|
| Denmark | All are eligible (Yes)<br>Income threshold (NO)<br>Household composition/size (NO)<br>Other (Some large dwellings are reserved for families) | Cost-based (about 3% of property acquisition price), with significant entry deposit | Rent increased or decreased according to running costs |
| US | All are eligible (No)<br>Income threshold (Up to 80% of local area median income)<br>Household composition/size (NO)<br>Other (40% of new admissions for each local agency must be for those below 30% of local area median income) | Usually 30% of income | Rent may or may not increase each year, it varies locally |

*Source:* Adapted from OECD. (2016d). *Key characteristics of social rental housing*. OECD. Retrieved from https://www.oecd.org/social/affordable-housing-database.htm. Copyright 2016 by OECD.

## 2.2 HOUSING ALLOWANCES

Housing allowances are financial transfers to assist low-income households directed at supporting their rent and housing costs. Allowances exist in nearly every country and typically vary based on the household's income, housing costs, and size. In the US, the government pressures allowance recipients to grow their income and eventually move and is alternative to providing public housing, which is heavily stigmatized (Priemus, 2000). Additionally, about 25 percent of housing assistance is targeted to low-income households (Miller & Swartz, 2002). Whereas in Denmark, rental subsidies are more widely given and socially accepted (OECD, 2016e).

Table 2
*Characteristics of housing allowances*

| Country - Administration level | Measure and costs covered | Eligibility criteria | Amount depends on |
|---|---|---|---|
| Denmark | *Boligydelse* for rental and housing costs | Primarily aimed at tenants with children, but also tenants with high rent and relatively low income without children are eligible | Calculated based on normalized rent, household size, dwelling size, level of household income. It covers 75% of rent up to a given maximum benefit |
| Denmark - Municipal | *Boligsikring* for rental costs | Only for recipients of old age pension and disability benefits | Calculated based on normalized rent, household size, dwelling size, level of household income. It covers 60% of rent up to a given maximum benefit (which increases according to the number of dependent children) |
| US - State and local agencies | Tenant based Section 8 voucher program for rental costs | Different criteria are set at the level of States and local housing agencies | Subsidy makes up difference between the tenant's rent contribution and a local "payment standard" that is tied to local Fair Market Rents. Tenants required to pay at least 30% of their income for rent |

*Source:* Adapted from OECD. (2016c). *Key characteristics of housing allowances*. OECD. Retrieved from https://www.oecd.org/social/affordable-housing-database.htm. Copyright 2016 by OECD.

Support for homeownership is common across all countries and is typically facilitated using an assortment of policies. On the demand side, subsidies for homeownership are in the form of grants, financial assistance, rent-to-buy programs, tax exemptions, and deductibility of mortgage interest payments, which is the most common subsidy type. On the supply side, grants and tax relief can be given to housing developers. These benefits are seldom means-tested and are often given to first-time homeowners. Whereas Denmark awards a greater share of its housing allowances to renters and social housing dwellers, the US forgoes .51 percent of its GDP in tax revenue in financial relief for the access to homeownership, the second highest mark of the approximately 20 OECD countries surveyed (OECD, 2017c). In relation to other housing benefits given in the US, 70 percent goes to homeownership activities (Pew Research Center, 2018). Below is a table summarizing the measures to support homeownership in each country.

Table 3

*Tax relief policies supporting homeownership*

| Country – Administration level | Measure | Description | Income restrictions | Eligibility criteria |
|---|---|---|---|---|
| Denmark - National | Tax deductibility of interest payments (*Rentefradragsret*) | Interest payments can be deducted from taxable income, for a share of 33%. The percentage is being gradually reduced | No | All individuals are eligible |
| US - National | Mortgage interest deduction | Mortgage interest deductibility from federally taxable income: homeowners are allowed to deduct the interest they pay on a mortgage that finances a primary or secondary residence as long as they itemize their tax deductions | Yes | The dwelling must be used for owner-occupation. The maximum mortgage amount is $1,000,000 on first or second homes if the loan was taken after Oct 13, 1987 |

*Source:* Adapted from OECD. (2017c). *Tax relief for access to home ownership*. OECD. Retrieved from https://www.oecd.org/social/affordable-housing-database.htm. Copyright 2017 by OECD.

## 2.3 MORTGAGE MARKET

The mortgage market is the primary financing tool of homebuying and is therefore key in relation to homeownership levels. The state can regulate mortgage measures (e.g., LTV, loan maturity, loan amortization) to directly affect the demand for housing and indirectly alter homeownership levels.

The liberalization of the Danish financial market began in the 1980s. First mortgage contract terms were liberalized in 1982, then interest rates were deregulated, and the limits on mortgage bonds were loosened by the end of the decade. Further restrictions on acquiring mortgage loans were lifted in 1993 as part of a stimulus package to boost the Danish economy (Lunde, 2012). Today, Denmark has one of the most accessible and robust financial systems in the world. With alternative financing types, such as variable-rate and deferred-amortization loans, financing home purchases has historically been easy, which lead to rapidly increasing home prices and high levels of household indebtedness (Whiteside & Williams, 2017). Comparatively, with Fannie Mae (the Federal National Mortgage Association) and Freddie Mac (the Federal Home Loan Mortgage Cooperation) – two government-sponsored enterprises (GSEs) in the secondary mortgage market – the mortgage market in the US is standardized with set financial requirements, term lengths, and fixed rates (Schelkle, 2012; Schwartz, 2009).

Both Denmark and the US undertook major financial system reforms following the financial crash (Table 4). In 2014, the Danish Financial Services Authority (FSA) implemented a five-element approach to regulate mortgage banks. Interestingly, young adults were generally exempt from the policies that covered stricter down payment requirements and new leverage ratios (Whiteside & Williams, 2017). Relatedly, young homeowners (under the age of 30) in Denmark were the most indebted and benefited the least from the great appreciation in housing prices from 1987-2007 (Lunde, 2012).

Table 4
*Notable mortgage market reforms following the Global Financial Crash*

| Country | Significant regulatory change since 2008 | Specific macro-prudential rule changes | Additional regulation of mortgage attributes | Mortgage market issues before/after the crisis |
|---|---|---|---|---|
| Denmark | 2013: increased regulation to limit systemic risk | Maximum 80% LTV in place but could borrow the rest until 2015 | 2014: introduced a large number of advisory constraints on products, a 5% down payment, interest rates on high LTV loans, etc. | Before 2008 shift to variable rate and interest only mortgages – High indebtedness mainly among existing mortgagors |
| US | Substantial tightening and strengthening | Some tools used in other countries are either not available to US regulators or are far from being applied. Include time-varying risk weights, time-varying LTV and DTI caps on mortgages | Rollout of the Dodd-Frank Act 2010 aimed at curbing the predatory lending techniques and ensuring lenders retain some of the risks. 2018: a partial repeal is in place | The US market was the epicenter of the GFC and not least in relation to sub-prime loans. After, market has tightened considerably albeit that regulation in the US is both fragmented and varied |

*Source:* Adapted from Whitehead J. & Williams P. (2017). *Changes in the regulation and control of mortgage markets and access to owner-occupation among younger households*. OECD. Copyright 2017 by OECD.

# 3. LITERATURE REVIEW

## 3.1 INTRODUCTION

The difficulties facing young people entering the housing market are relatively recent phenomena. As will be discussed in the subsequent sections, the housing crises confronting young adults are international in scope and caused by a myriad of intertwined factors. Depending on the focus and context of the research, the causes and potential solutions to the root problems clearly vary. This literature review will cover the various perspectives to synthesize the findings and arguments, generate a holistic understanding of the subject matter, and pinpoint any potential gaps. Before diving into the more focused topic of young adult homeownership, a brief summary of the literature relating to the housing market is necessary. This is especially relevant because of the strong connection between the current state of the homeownership market and its preceding developments.

### 3.1.1 HISTORICAL PERSPECTIVE

The policy goal of increasing homeownership has increasingly become a priority of OECD countries in following World War II (Ronald, 2008; Ronald & Elsinga, 2012). Early works in the 1970s and 1980s focused on the ideology – both the values and social understanding – of homeownership (see, for example, Esping-Andersen, Friedland, & Wright, 1975; Forrest, 1983; Kemeny, 1981, 1986). As well, these works typically fixated on the state's role in the housing market and its intentions to forward homeownership goals to maintain social stability and heighten self-responsibility.

Kemeny (1981) contends that living options are explicitly controlled and shaped by the state and therefore the state's role should be the focal study point. While ownership was normalized in many states, alternative living arrangements, such as private renting and social housing, were residualized by the state and stigmatized by society (Forrest & Murie, 1988; Priemus & Dieleman, 2002). This move toward an asset-based welfare system signaled a weakening of government support in favor of individual responsibility, a movement referred to as 'responsibilization' (Garland, 1996). In Esping-Andersen's (1990) seminal work, *The Three Worlds of Welfare Capitalism*, he proposes a groundbreaking approach to clustering countries based empirically on welfare regime traits, which had previously been lacking in the field. While this work develops a framework for understanding the responsibility of the state, private parties, and family, the focus of literature on the housing market to this point was still principally from society's and the state's perspectives.

On top of its social advantages and role as shelter, private homeownership has clear and well-documented financial benefits, too (Henderson & Ioannides, 1983; Ioannides & Rosenthal, 1994). Home purchasing decisions are shaped both by the investment opportunity, which is influenced by economic and housing market situations, and the household's financial standing (Drew, 2015; Ortalo-Magné & Rady, 2002). Crucially, homeownership is the largest component of household wealth and is one of the most effective forms of private insurance, especially in the absence of expansive public welfare services (Andersen, 2012; Arundel, 2017).

Riley and Ru, (2011) calculate that at an annual home price appreciation of two percent, homeownership is not more expensive than renting; and homeownership has additional benefits in the form of access to better schools, jobs, and neighborhoods (Clark, 2013). While private renting is often viewed as a stepping-stone toward homeownership, evidence indicates that renting decreases rather than increases savings and investment potential (Arundel, 2017; Forrest & Hirayama, 2015). To add to this argument, Tabner (2016) uses net present value to calculate that a holding period of five to ten years of homeownership is needed to break-even compared to renting. Clearly, there are proven and evident financial rewards to homeownership, giving private individuals clear motives to pursue it and the government reasons to incentivize it.

### 3.1.2 YOUNG ADULTS AND HOMEOWNERSHIP

Building on the foundations of homeownership and housing market literature, an emerging discussion centers on the difficulties facing young people entering the homebuying market. This a product of the great home price appreciation that many countries experienced beginning in the 1980s and lasting up until the GFC. This period is mirrored by the rise in literature dissecting the causes and outcomes the changing housing and homeownership markets. Relatedly, during this time, young adult homeownership rates were decreasing, resulting in postponed homeownership (McDonald & Baxter, 2005), higher rates of living with parents (Isengard & Szydlik, 2012), and increased concentrations of wealth and property among a smaller cohort (Arundel, 2017; Kemp, 2015). As a result, the current generation has often been referred to as 'generation rent' or 'boomerang kids', labels that are in stark contrast to the post-war population boom referred to as 'generation own' (Hoolachan, McKee, Moore, & Soaita, 2017; McKee, 2012).

This paper pursues a similar research question as Lersch and Dewilde (2013) who explore the impact of the combination of various factors on young adults attempting to become homeowners. While that study analyzes twenty-two European countries, allowing it to deduce the determinants of first-time homeownership in different contexts, this paper will be a comparative study of two countries. In this regard, this analysis will mirror the approach of literature that focuses on comparative case studies in order to establish the unique factors driving the housing and homeownership markets (see, for example, Forrest & Yip, 2012; Groves, Murie, & Watson, 2016; Kurz, 2004).

Having established a historical context of the housing market literature, the next section will explore in greater depth the existing perspectives on the challenges facing young people trying to become homeowners. The review is segmented into distinct although interconnected subtopics. In doing so, it will identify relevant points to further study analytically and with case studies. These topics will cover both demand and supply drivers, after which they will be placed based according to which side of the equation they impact. Although this paper focuses on two countries, this section seeks to develop an understanding of housing markets globally in order to learn about relevant drivers and potential solutions.

## 3.2 BODY

### 3.2.1 THE ROLE OF THE STATE AND ITS POLICIES

As previously discussed, some of the earliest literature evaluated the state's role in shaping the housing market and influencing homeownership levels. The literature focusing on the relationship between states and the homeownership problems of young adults can generally be separated into two groups, with some overlap. The first relates to the state's influence on the housing market based on its welfare regime type or broad government classification and is often a comparative analysis across many countries. The second focuses on the impact of specific policies or regulations.

Filandri and Bertolini (2016) provide one of the few studies of homeownership among young adults with an international perspective that evaluates both micro- and macro-level drivers. This study considers three factors that drive homeownership – housing tenure, the labor market, and the welfare state – to better understand their independent and combined effects on young people's ability to enter the homebuying market. In regard to the latter factor, it is noted that the welfare state greatly impacts homeownership levels. This finding is substantiated by the work of Dewilde (2017) and Allen (2006), which show ownership levels, especially among young adults, correspond to the welfare regime clusters developed by the framework in Esping-Andersen (1990). This perspective is rooted in the previously described early literature on homeownership.

To reiterate, it has been found that the support of the welfare state is inversely related to homeownership levels (Allen, 2006; Castles, 1998), indicating that households employ homeownership as a private safety net when the state's social services are lacking. Conley and Gifford (2006) calculate social security benefit expenditures as a percentage of GDP and find that a one percent increase in social spending results in a nearly one percent decrease in the homeownership level. However, Castles (1998) indicates that the inverse relationship between homeownership levels and welfare expenditures is weakening; thus, while social housing spending is decreasing, those finances are often being shifted towards other welfare services (Priemus & Dieleman, 2002). More recent data, however, indicate that social spending will decline among OECD countries during these times of austerity (Castles, Leibfried, Lewis, Obinger, & Pierson, 2012; Forrest & Hirayama, 2009). In respect to young adults, McKee (2012) uses a logit model to prove that lower social expenditures greatly increase the likelihood of a young adult being a homeowner.

Similarly, Filandri and Bertolini (2016) find that young adults are more likely to be homeowners in countries where welfare services are not robust, irrespective of the labor market situation. The qualifier is notable because labor market instability is one of the most common explanations for homeownership difficulties and one that will be discussed in greater detail in a later section (Lersch & Dewilde, 2013). However, when also including the institutional perspective, the effects of labor market instability on homeownership decisions are weakened in familialistic housing systems, like those found Southern and Central Europe, whereas they are exacerbated in the marketized systems of Northern Europe (Lersch & Dewilde, 2013). There are clear discrepancies between homeownership rates across countries but the causes – such as culture, welfare regimes, labor markets, and housing policies – are deeply entangled.

In Groves et al.'s (2016) case studies on the housing markets of Europe and Asia, they note that although welfare regime types tend to persist, housing markets are more malleable to the state's goals and needs, especially in comparison to the other welfare pillars like social security and healthcare. For this reason, it is necessary to look at the 'housing regimes,' defined as the social product of housing welfare (Kemeny, 2001, 2006). For example, Denmark's housing policies, which support free-market principles, encourage pro-homeownership goals that run counter to the idealized form of the social democratic regime found in other Scandinavian countries (Lunde, 2012; Sørvoll & Bengtsson, 2018). Privatization and free-market strategies have dominated political discourse and have been especially prevalent in the housing market over the last three decades. These policies generally result in the decommodification – defined as the strength social services and a citizens' ability to attain them outside of the market – of social housing, removing tenet protections in the private rental sector, and encouraging homeownership as the preferred housing provision (Forrest & Hirayama, 2009, 2015).

As well, McKee (2012) finds that young adults are not prioritized for social housing thus pushing them toward the private rental sector. While subsidies for homeownership far outweigh those for public and rental housing in the US (Schwartz, 2014) – a trend that holds across OECD countries (Erlandsen, Lundsgaard, & Huefner, 2006) – these tax benefits typically go to households that could already afford a mortgage and therefore do not directly increase homeownership (Bardhan et al., 2011; Schelkle, 2012). Although these policy changes impact all households, effects are especially pronounced for young adults pursuing homeownership. In a study on the effects of neoliberal policies in England and Japan over the last the three decades, Forrest and Hirayama (2009) find declining rates of homeownership in all young adult groups under the age of 35. These two countries represent the rule, rather than the exception, as the decline in homeownership rates among young people are found across OECD countries (Clapham, Buckley, Mackie, Orford, & Stafford, 2010; Filandri & Bertolini, 2016; Forrest & Hirayama, 2015; Lennartz et al., 2016).

Beyond the welfare regime, specific policy impacts on homeownership levels are frequently studied. For example, the state can either manipulate the housing market directly – adjusting subsidized mortgage loans, public housing expenditure, tax deductions on mortgage interest payments, rent-stabilization laws – or indirectly by encouraging individuals to seek private insurance in the form of homeownership rather than rely on government support (Andersen, 2012; Arundel, 2017; Bourassa & Yin, 2008). In seeking to explain the difference in homeownership levels across Europe, Hilber (2007) finds that differences in tax policies have a significant explanatory value. More specifically, the non-taxation of imputed rents for owned homes have the strongest effect and mortgage interest deductions and capital gains taxes favoring ownership have moderate effects.

Results from cross-country policy comparisons are often tenuous; for example, in the previous study, only two of the 15 sampled nations even offer an imputed rent taxation policy. As well, further studies on the effectiveness of mortgage interest deductions – one of the most common policy tools to encourage homeownership – indicate that it has no bearing on ownership levels (Bourassa, Haurin, Hendershott, & Hoesli, 2013; Hilber & Turner, 2014). Arestis, Mooslechner, and Wagner (2009) find that the importance of mortgage interest deductions has decreased in the preceding decades in European countries. Of note, this specific policy does seem benefit households that could already afford to purchase a home, while it lessens the likelihood of young adults becoming homeowners due to its effect on house prices (Gale, Gruber, & Stephens-Davidowitz, 2007; Toder, 2010).

### 3.2.2 CONSUMER FINANCING

The aforementioned policies can stoke demand for homeownership, as can improving the attractiveness of mortgages – either by lowering loan-to-value (LTV) levels or easing lending standards. In a study on 14 OECD countries over 30 years, Chiuri and Jappelli (2003) use data on mortgage availability to conclude that homeownership is skewed towards a younger demographic in countries with more developed mortgage markets, while down payment requirements on mortgages negatively affect homeownership for young adults. Andrews and Sanchez (2011) corroborate these findings using a probit model to show that easing constraints on down payments has led to higher homeownership levels among young adults and other credit-constrained households. In a similar study on five countries, Bicakova and Sierminska (2008) find that the variation in homeownership rates among young adults (ages 18-40) is driven by the development of the housing and mortgage markets, as measured by mortgage take-up rates and its distribution across income. On a country level, Martins and Villanueva (2006) analyze the household living decisions in Portugal and calculate that improved mortgage access increases the likelihood of a young adult leaving home by 31 to 54 percentage points. In regard to the down payment required for home purchases, Chiuri and Jappelli (2003) calculate that lowering the down payment ratio by 30 percentage points would improve the level of homeownership among young adults by around 15 percentage points.

The role of mortgage markets in relation to housing decisions has been well studied following the period of financial deregulation in the three decades preceding the GFC. The rise and deregulation of subprime lending practices in the US were an attempt to raise homeownership levels among poor, minority, and young adult households (Schwartz, 2012; Weicher, 2000). Looking at this period, Kiyotaki, Michaelides, and Nikolov (2011) find that that loosening down payment requirements has a substantial impact on increasing homeownership rates. From 2000-2007 half of the increase in homeownership growth in the US came from young people under the age of 29 (Bardhan et al., 2011).

Conversely, Duca, Muellbauer, and Murphy (2010) find that these lax credit policies in the US had little effect on the long-term homeownership level of young adults in inelastic housing supply areas. Also, weakened credit and financial systems combined with highly leveraged homebuyers created a self-reinforcing system that continued to drive up house prices (Glick & Lansing, 2010; Malpass, 2008). Following the GFC, stricter lending practices were implemented in most OECD countries, making it more difficult for young adults with fewer savings and weaker credit standings to secure loans (Claessens, Dell'Ariccia, Igan, & Laeven, 2010; Lennartz et al., 2016). Forrest and Hirayama (2009) argue that the devastating effects of the GFC and the subsequent restrictions placed on the mortgage markets indicate that the policies meant to support young adults are unlikely to be reinstated in the near future.

Martins and Villanueva (2006) estimate that up to 20 percent of the cross-country difference in the decision to leave home is based on credit availability. The magnitude of this estimate at once substantiates the role of the mortgage market and also underscores the importance of the multitude of other factors that drive homeownership. The mortgage market has a substantial and clear relation to homeownership levels but is just one aspect of a country's housing regime, which sits within the larger context of the welfare regime and links to the state's other policies and objectives. The reviewed literature indicates that these factors are key components in explaining the differences between varying homeownership rates between countries. In summation, young adults are increasingly finding it difficult to become homeowners because states are shifting toward asset-based welfare systems, free-market housing policies, ineffective tax and mortgage policies, and stricter post-GFC lending practices.

### 3.2.3 ECONOMIC FACTORS

Both a cause and a product of the previously discussed government policies and regimes, economic situations are a clear and well-documented influencer of the housing market. This can take form in a variety of ways, including job stability, inflation rates, and consumer confidence about the future (Hoolachan et al., 2017; Lennartz et al., 2016; Mykyta, 2012; Sanders, 2005). Groves et al. (2016) examine the welfare and housing regimes in Asia and show that their housing policies were altered in response to crises, affected by external influences, and diverged over time from their similar starting point. Poterba's (1984) oft-cited paper on the US housing boom in the 1970s indicates that high levels of inflation substantially diminished homeownership costs and was a major factor in rapidly increasing real house prices. Brunnermeier and Julliard (2008) note the impact of 'money illusion' and misreading future interest rates in dictating an investor's decision on whether to buy or rent. As well, a number of authors have mentioned the role of consumer expectations of continued home price appreciation in creating the housing bubble before the GFC (see, for example, Bardhan et al., 2011; Clark, 2013; Kemp, 2015).

Following the bursting of an asset bubble, Forrest and Yip (2012) state that the young adults are the most vulnerable because of their lower income levels and over-reach to become homeowners. Relatedly, Schwartz (2012) argues that younger and poorer households are more at risk of the effects of job loss and economic shocks compared to homeowners with substantial equity who can survive these adversities. Lunde (2012) finds that younger homeowners (under the age of 30) in Denmark were the most indebted and benefited the least from the great appreciation in housing prices from 1987-2007. In a study on the recent developments of the Danish housing market, Lunde (2012) concludes, “the housing market upturn has benefitted the elderly at the expense of the young, creating barriers to owner occupation and financial strains on many who did succeed in buying a home” (p. 152).

Beyond the aforementioned tighter lending policies enacted following the financial crisis, the general economic downturn and the impact on job stability are crucial in relation to young adult homeownership levels. Card and Lemieux (1997) find that in the aftermath of income shocks, young adults are more likely to continue to live with their parents. Interestingly, these trends differ across countries and regions, as shown by Billari, Philipov, and Baizán (2001) and Giuliano’s (2004) studies on the household formation patterns of children of European migrants residing in the US. These studies contend that family structure and culture influence living arrangements and explain the country differences in homeownership rates.

Following common logic, the likelihood of living with parents is higher for low-income individuals in the US (Aassve, Burgess, Chesher, & Propper, 2002) and in areas with higher housing costs, at least in Spain (Martinez-Granado & Ruiz-Castillo, 2002). The first point contradicts early findings from Haurin, Hendershott, and Kim (1994), which show that earnings capacity was not a strong determinant of the likelihood to live alone. Similarly, Buck and Scott (1993) find no connection between employment or income and the decision to leave home to live alone or with a partner. The reason for the disconnect between contemporary research and earlier work is not immediately clear; however, the decreasing affordability of homeownership in recent decades could be a key factor.

To this point, Schwartz (2012) notes that the house price to median income ratio in the US was 60 percent higher in 2006 compared to 1997-1998. Similarly, Ronald (2008) shows homeownership to be decreasingly affordable to young adults due to rising prices. Contrary to this argument, McDonald and Baxter (2005) find that the delay in marriage age, rather than declining affordability, is the primary cause behind the postponement of homeownership in Australia. However, job stability is also linked to the delay in marriage age (Oppenheimer, 2003; Xie, Raymo, Goyette, & Thornton, 2003) and these findings should be revisited since they were conducted prior to the GFC and only in one country.

#### 3.2.4 EMPLOYMENT TRENDS

Becoming a homeowner demands search and transaction costs, which is partly why homeowners spend longer in the same residence than renters (Coulson & Fisher, 2014; Rohe & Stewart, 1996). A stable income, which is dependent upon job stability, is needed to facilitate the homebuying process and unstable employment can deter individuals from settling down in a home (Coulson & Fisher, 2014). This supports earlier findings by Haurin et al. (1994) that find that income is the main driver of homeownership choices for young adults (ages 20-33). Job insecurity is a factor that impacts the rate of homeownership within young adults and earnings risk has increased since the 1970s (Diaz-Serrano, 2005; Fisher & Gervais, 2011). This argument is supported by the work of Becker, Bentolila, Fernandes, and Ichino (2004) who find that young adults are more likely to remain living with their parents when they experience job insecurity.

Similarly, Filandri and Bertolini (2016) find that temporary employment rates have a significant negative effect on the likelihood of young adult homeownership across Europe. In an analysis of three European countries, Laaksonen (2000) finds that high youth unemployment and an unstable job market are principle causes of the delay in the transition to adulthood. Similar trends are spotted in a comparative study of Japan and the UK (Forrest & Hirayama, 2009). However, this work notes that labor market problems are more connected to low levels of young adult homeownership in Japan, whereas economic factors are more relevant in the UK, as labor issues have not been as prevalent among young people (Doogan, 2001).

Kupke and Marano's (2003) survey of 508 first-time homebuyers (ages 24-34) finds that 55 percent label job security a minor factor when it comes to home purchasing. Beyond simply job security, certain workplace and social trends indicate that young adults are less likely to remain at the same job for long periods of time and thus are not as likely to become homeowners. In the previously mentioned survey, 57 percent of young adults within the workforce do not anticipate staying with their current employer for the rest of their working lives. This is a sharp difference than the previous generations, 84 percent of whom anticipated staying at their jobs until retirement (Bannon, Ford & Meltzer, 2011). The statistics stated above align with Kupke and Marano's (2003) study in which 25.7 percent of young adults cite homeownership as a hindrance when changing jobs.

Young adults still widely believe that owning a home is the most desirable living situation and is a long-term investment (Beer, Faulkner, & Paris, 2011; Pannell, 2007). Fisher and Gervais (2011) argue that although income risk has a positive effect on homeownership in the form of increased precautionary savings, there is a far greater negative effect from the potential impact of the risk, which delays homeownership. Another notable mention from Kupke and Marano's

(2003) survey is that a majority of young adults that are looking to purchase their first-home agree that job security affects their home purchasing behaviors by taking out lower loan amounts, purchasing less expensive homes, house hunting for longer, and lowering the price brackets in which they are willing to spend. Young adults with higher household incomes and job security have the choice on the price to purchase a home and how to handle financial risks, which is a disadvantage to those with lower incomes.

Lersch and Dewilde (2013) highlight differences between homeownership rates across twenty-two European countries, which largely follow welfare regime clusters, but note the widespread impact that employment insecurity has on delayed homeownership among young adults. Madsen (2013) also compare European countries and find worsening labor situations – in the form of unemployment, part-time jobs, and temporary contracts – since the GFC. In summation, large economic shocks have direct effects on the labor market and indirectly on the ability to ascend the housing ladder. As well, these effects are most pronounced among young adults, a group that is now increasingly delaying the transition to living alone and to homeownership.

### 3.2.5 GENERATIONAL DYNAMICS

There is an emerging perspective on the young adult housing crises that focuses on the generational link between the earlier 'generation own' and the current 'generation rent.' The previous generation became of homeowning-age at a time when housing policies were pro-ownership (e.g., mortgage interest tax relief, right to buy in the UK, weak borrowing requirements), general economic growth and stability, and better home affordability (McKee, 2012). These macro-contexts are in stark contrast with the present situation facing young adults. Further, the reduction of expenditures on social services in favor of asset-based welfare increases the reliance on family support, a system that McKee (2012) calls 'family-based welfare.'

In a study on the current era of 'late home ownership' in capitalist economies, Forrest and Hirayama (2018) argue that family assets, more so than income flow, play a key role in the pattern of homeownership. Similarly, Boltanski and Esquerre (2017) coin the phrase 'economy of enrichment' and reason that asset-based stratification – particularly housing wealth, as it is the largest component of personal wealth – is the main driver behind growing inequality and social restratification. Mulder et al. (2015) also identify the self-reinforcing pattern of homeownership in families as one of the key drivers in growing inequality within and across generations.

Whether through social support, inheritance, or inter vivos financial transfers, wealth transfers have a profound effect on an individual's ability to become a homeowner (Albertini et al., 2007; Arundel, 2017; Mulder et al., 2015). The challenges for young people are compounded if their parents are not homeowners, as the ability and willingness of parents to aid their children's homebuying efforts greatly depend on the parents' homeownership status (Goldscheider & Goldscheider, 1999; Heath & Calvert, 2013). In studies on the UK housing market, Heath (2008) and Heath and Calvert (2013) find growing dependencies of young adults on their parents, in the form of cohabitation and financial support for living and homebuying. Another study on the UK found that 27 percent of first-time home purchases were made with support from parents in 2009-2013, up from 17 percent in 2005-2008 (Humphrey & Scott, 2013). Similarly, McKee (2012) cites data from the Council of Mortgage Lenders to show that the average age of first-homeownership in the UK is six years earlier for people who receive financial assistance from their family compared to those who do not.

The dependency on family support for homeownership is also studied in the housing markets of the US (Goldscheider & Goldscheider, 1999), Japan (Forrest & Hirayama, 2009; Hirayama, 2012), Romania (Druta & Ronald, 2018), the Netherlands (Helderman & Mulder, 2007; Mulder

& Smits, 1999), and between European countries (Mulder et al., 2015). Further, Albertini et al. (2007) show that the likelihood and form of parental support match welfare regime clusters, while Lennartz et al. (2016) finds inter vivos transfers to be most common in the more individualistic societies found in the Nordics.

In the same vein, Filandri and Bertolini (2016) analyze homeownership levels in Europe and find that in countries with poor social welfare, low-class young adults are more likely to be excluded from homeowning and thus turn to renting instead. McKee (2012) notes the worldwide trends of aging populations, slowing fertility rates, and declining working age. McKee argues that the combination of these trends makes it difficult for young people to support the large elderly population, forcing older people to support themselves via homeownership while the younger generation faces an uncertain future as they are being excluded from homeownership.

Inheritance is another path to homeownership and, not surprisingly, is strongly tied to the homeownership statuses of an individual's parents and his or her spouse's parents (Hamnett, 1991). From this study, Hamnett finds that "the overwhelming majority of beneficiaries were already owners when they inherited… Owners were six times as likely to inherit as council tenants" (p. 525). Relatedly, Arundel (2017) calculates an increase in the concentration of housing wealth among the top-20 and top-40 percent of young adults in the UK, which demonstrates growing intra-generational inequalities. In a study of inheritance patterns across Europe, Mulder et al. (2015) discover that intergenerational transfer of homeownership is most common in places where houses were more expensive and homeownership less affordable.

Both Groves et al. (2016) and Forrest and Hirayama (2018) segment the post-war boom population into two ownership types – 'real estate accumulators' that continue to grow their assets and wealth across generations and 'housing wealth dissipaters' that bought homes in poorer locations and have had to use their assets to survive, rather than accrue greater wealth. The authors also define the third archetype, 'perpetual renting families,' which are households that were unable to become homeowners and had children that struggle to acquire assets. The disparity between early- and non-homeowners during the housing boom of the mid-1900s is even more apparent in the aftermath of the GFC as now, more than ever, it is difficult for first time homebuyers due to financing restrictions, austerity measures, and economic instability (Clark, 2013; Lennartz et al., 2016; McKee, 2012). Clapham et al. (2010) confirm the impact of social class on homeownership – finding that having middle-class parents increases the likelihood of purchasing a home due to economic support, homeownership favorability, and job preferences.

As young people typically have lower incomes and fewer assets, they are forced to settle on lower quality homes in worse locations or alternatively not become homeowners (Druta & Ronald, 2017, 2018). The importance of the location of residency, as well as the persistence of living areas across generations, is also well studied. Van Ham, Hedman, Manley, Coulter, & Östh (2014) and Vartanian, Walter Buck, and Gleason (2007) find evidence for the young adults living in similar socio-economic areas to those that they were raised in. Building on these results, Hochstenbach and Boterman (2015) use Amsterdam as a case study to highlight the financial and non-financial support given to children that allow them to live in better neighborhoods, thus reproducing existing social classes.

Another by-product of the GFC was the subsequent rise in 'landlordism' or the 'buy-to-let market,' which is found predominantly in homeownership societies and especially in Anglo-Saxon countries (Arundel, 2017; Forrest & Hirayama, 2015). Following downturns, credit typically becomes available at attractive rates – combined with low yields on other investment opportunities and property prices on the rebound – purchasing another home is an appealing option, at least for households with existing wealth (Arundel & Doling, 2017; Forrest & Hirayama, 2015). As a result, Arundel (2017) calculates that the ratio of home equity in the US between the top-20 percent and the middle-20 percent grew from five in 1998 to nine in 2010.

Paris (2009) focuses on the investment strategy of second homes and Hochstenbach and Boterman (2015) note that these properties can be used to house their children or rent on the private market. Kemp (2015) notes the concentration of home assets among the wealthy as a contributor to the growth and increased stress on the private rental sector in Britain. Relatedly, Van Criekingen (2010) reports that young people drive up prices – primarily of rentals but also of homes – because of their high turnover rates, living arrangements, and inflexibility toward location.

In summation, the growing unaffordability of housing, combined with the restructuring of welfare regimes towards family-based systems, has increased young adults' reliance on their parents for housing and homeownership efforts. These trends highlight growing inter- and intra-generational inequality, differences between the post-war generation and the current one, and the effects on potential young adult homebuyers. As well, these factors persist across country lines, albeit to differing extents, and appear to be getting worse since the GFC.

### 3.2.6 SOCIAL AND CULTURAL TRENDS

The role of culture in influencing the homeownership market is increasingly being studied and used to compare homeownership rates across countries. These factors also influence how people view different living situations as acceptable and desirable, as well the normalcy and form of inheritance given (Albertini et al., 2007; Case & Shiller, 2003; Isengard & Szydlik, 2012). Hilber

(2007), using a study of 15 European countries, concludes that demographic factors are significant in explaining household living arrangements and homeownership levels. Using survey data of second-generation immigrants living in the US, Schmidt and Huber (2017) conclude that cultural preferences are key explanatory factors in the differing homeownership levels around the world. Despite the many problems surrounding the housing market, homeownership continues to be the desired form of living among young adults (Beer et al., 2011; Pannell, 2007). In spite of the general preference toward owning, McKee (2012) notes that living preferences differ over time based on greater contexts.

As well, it is important to evaluate key 'critical moments' (Thomson et al., 2002) in young adults' lives that contribute to their unique characteristics, such as values, attitudes, and personality traits, which define and differentiate one generation from another (Ryder, 1965). Calvert (2010) refers to this perspective as a study of 'life course,' while Beer et al. (2011) similarly focus on the critical transition points in life in relation to housing paths. Historically, homeownership occurs in a person's early-twenties to mid-thirties, although this varies across regions (Herbert, Haurin, Rosenthal, & Duda, 2007). Further, McKee (2012) and Appleyard and Rowlingson (2010) note the connection between social class and homeownership opportunities.

Married couples have much stronger preferences toward homeownership compared to unmarried individuals and families without children (Drew, 2015). In the last three decades, young adults have seen a huge change in the rates that households are formed and dismantled in the US (Aassve et al., 2002). Fisher and Gervais (2011) conclude that half of the drop in young adult homeownership levels over this time was due to decreased rates of marriage and family formation. Similarly, Drew (2015) looks at the level of young adult homeownership over the past two decades and finds that the greatest factor is the decline in married couples, with most of this effect taking place during the economic downturn when potential couples postponed marriage and family formation. A study by Rainer et al. (2011) compares the marriage rates of young adults in the 1970s and the 2000s. The results show that in the 1970s, 44 percent of young adults was married, and the median ages were 20.8 and 23.2 for women and men, respectively. In comparison, in the 2000s, only 15 percent of young adults were married and the median ages were 25.5 and 27.5 for women and men, respectively.

Although the employment rate of female young adult grew during the past three decades (Fisher & Gervais, 2011), which would suggest an increase in household income and thus the ability to purchase a home, Caucutt, Guner, and Knowles (2002) suggest that this trend has a strong effect on decreasing the likelihood of marriage and family formation. As well, dual-income households increase the affordability and likelihood of homeownership (Haurin, Wachter, & Hendershott, 1996; Hendershott, Ong, Wood, & Flatau, 2009). This is in line with earlier findings by Avery, Goldscheider, and Speare (1992) that indicate that both the employment status and earnings of young adults are key drivers in the decision to leave home both to live alone and to marry.

In Mudd, Tesfaghiorghis, and Bray's (2001) study of Australia, they argue that young adults are simply deferring the age of first-homeownership due to historical developments and future expectations. Building on these findings, McDonald and Baxter (2005) find that homeownership rates are not falling across generations and that marriage is the key determinant of entry into homeownership. Clearly marriage age has an impact on first-homeownership age but there are a number of related and mitigating economic, social, and cultural factors. Interestingly, even homeowners who divorce and have their children move out at adulthood continue to have higher homeownership levels compared to individuals who never married or had kids (Drew, 2015).

This finding supports earlier work that supports the idea that homeownership is pursued because of marriage (see, for example, Clark, Deurloo, & Dieleman, 1994; Clark & Huang, 2003).

Aassve et al. (2002) suggest that young adults, upon leaving their parental homes, typically live alone. From this stage of living alone (e.g., in single apartments, living with roommates, and cohabitation) they either move into their marital home or go back to their parental homes and then later move on to marital homes, hence delaying the age at which they marry. Fisher and Gervais (2011) find that marriage has a substantial effect on homeownership in general – 23 percent of homeowners are more likely to be married when compared to someone of the sex, income, race, education, family structure, age, and year who is not married.

Young adults are indeed marrying later; however, it is important to look at other trends that have emerged in lieu of marriage. A study by Lamidi and Manning (2016) finds that 73 percent of women ages 25-29 have cohabited. Young adults are not necessarily shying away from marriage; instead, they are choosing cohabitation as a first union. It is also important to note the short duration of this cohabitation period, which lasts an average of two years and the likelihood of transitioning to marriage is low (22 percent). This becomes a breeding ground for serial cohabitations, pushing today's marriage age higher than the average age of previous generations (Eickmeyer & Manning 2018).

When evaluating young adults as potential homeowners, research has made an important link of individual income to the rates at which young adults get married. Having parents with higher earnings delays young adults' transition out of their homes and into marriage, while high earners are more likely to move into independent living situations (Aassve et al., 2002). Within the 12-year study window, five percent of young adults resided in their parental home, 29 percent lived alone once, 52 percent make two transitions, and 14 percent make three or more transitions (Aassve et al., 2002). This research suggests an economic-based theory that establishes a 'good effect' that raises the marriage rate and a 'self-reliance effect' that quickens living alone but postpones marriage. The non-linear housing trajectory earns young adults the term 'boomerang children' (Beer et al., 2011), and is emblematic of the prevalent 'extended' path from child to adult (Calvert, 2010).

Using a multi-cycle to evaluate the initial movement from the parental home and the timing of other significant transitions, Aassve et al. (2002) suggest that income has a huge effect on said transitions. Higher individual resources propel the rate at which young adults leave the parental home and marry; although abundant parental income and human capital delay marriage. When a young adult's income grows, he or she is more likely to create a married household and when it decreases, the creation of a household is delayed (Aassve et al., 2002). While these findings point out that personal income affects young adults' decision to move into marital homes, it lacks the explanation for how individuals' incomes affect their homeownership rates and how housing affordability plays a role.

### 3.2.7 LIVING TRENDS

During the early 2010s, there was a great migration toward city centers. This movement, known as 'youthification,' can be explained by the decline in crime rates in these areas, upgraded urban amenities, and budding interest in leisure time (Lee, 2018; Moos, 2016). Schwartz (2014) notes that in city centers, housing stock is typically private rental with ownership opportunities generally limited to condominiums. Youthification was a short-term counteraction to the economic recession, which implies that as soon as jobs become available away from city centers, young adults will migrate away in search of more affordable housing opportunities (Lee, 2018).

The path to affordable housing has fostered a renter's market among young adults. Hoolachan et al. (2017) find that 43 percent of young adults believe that renting is a way to live in a location that is out of their buying price range and are less convinced that having the perfect home is only obtainable by buying their own home. Hopkins (2013) notes that housing markets are very localized and that young adults' purchasing power varies greatly in accessing different living arrangements and homeownership. Labor market conditions and moving costs, as well as housing prices and quality of life, are primary determiners of an individual's decision to migrate (Berger & Blomquist, 1992; Gabriel, Shack-Marquez, & Wascher, 1992). More recent data indicate that desirable location and social networks may be a more important influencer on the decision to move than wage or housing costs differences (Michaelides, 2011). Chen and Rosenthal (2011) separate migrants based on demographics and find that young, educated adults are more likely to move to areas with better business environments rather than to places with better consumer amenities .

Moving within the rental market is relatively inexpensive; however, home purchases require additional transitional and transactional costs beyond a down payment (Coulson & Fisher, 2014). However, McKee (2012) notes that the private rental sector is expensive, especially in comparison to social housing, and lacks protection and security from landlords and external shocks. Young adults must compare housing prices to the offerings of the rental market, also known as the price-to-rent ratio, and if the income risks are manageable (Fisher & Gervais 2011). With rising income risks, in the transition from renter to homebuyer, greater funds are needed to purchase a home and this process is taking longer. Fisher and Gervais (2011) conclude that it is important to note that heightened income risk and policy changes to down payments requirements delay the transition from renter to homeowner among young adults.

### 3.2.8 EDUCATIONAL TRENDS

Student loans can also play a factor in postponing the decision to become a homeowner. Note that the rise in student loans in relationship to homeownership is primarily relevant and studied in countries with higher education costs, such as the US and the UK. Christie and Munro (2003) explore the connection between changing welfare policies in the UK have resulted in more expensive education costs that primarily benefit the wealthy, as the need to take on loans may deter low-income families from pursuing higher education. Mezza, Ringo, Sherlund, and Sommer (2015) calculate that student loans borrowed in $1,000 increments will lower the homeownership level by 1-2 percent.

It can be further argued that student loans negatively affect credit scores for borrowers, making it harder to secure a mortgage (Spencer, 2009). As higher education costs continue to rise, so too do borrowing costs for young adults, which is said to reduce the rates of homeownership for future students. Andrew (2010) labels increased debt levels as one of the main reasons why young adults in the UK are living at home with their parents for extended periods. Heath (2008) finds a rise in young adults sharing housing with non-family members as well in the UK. Mezza et al. (2015) further state that the tightening of mortgage approval standards post-GFC disqualifies young adults with student loans by lowering their debt to income ratios, credit scores, and savings required for down payments.

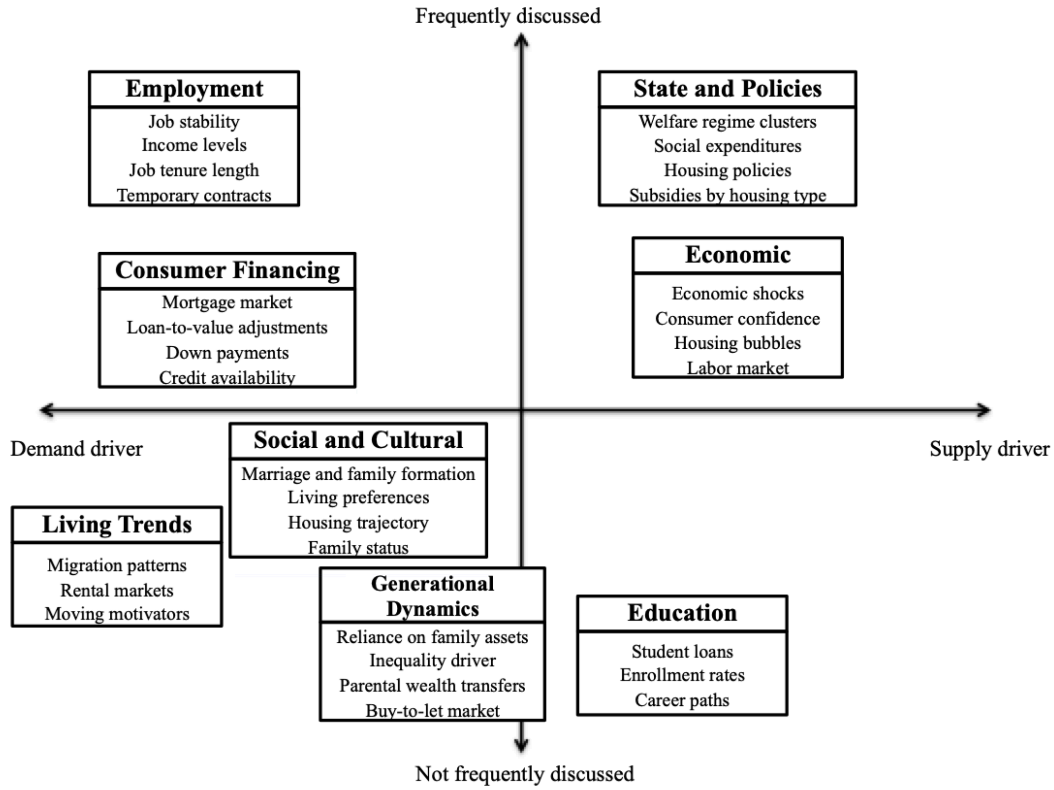
Related to the rise in student loan debt is the increased enrollment in higher education and lengthened educational careers, which are seen as ways to increase future earnings and accumulate the capital needed to facilitate homeownership. In a study of young adults in the US between 1960 and 1990, Gyourko and Linneman (1997) find that the level of education attainment became more important in explaining homeownership rates. As well, the authors argue that the greater importance of education and professional careers delayed marriage and family formation, which pushed back the age of homeownership. Christie, Munro, and Rettig (2010) note that individuals pursuing longer educational careers have a greater financial dependency on their families and less financial freedom. Smith and Holt (2007) also find growing populations and increasing property prices in university towns as higher education becomes more common. Andrew (2009) suggests that graduates will purchase their homes based upon the expected earnings related to their degree and Alasdair and Furlong (2000) note that higher education costs may force students from low-income classes to enroll in shorter and more vocational programs.

## 3.3 CATEGORIZING THE LITERATURE

Clearly, the nature of the housing market and the problems relating to young adult homeownership are complex and wide-ranging. The discussed perspectives relate to the drivers of homeownership levels from the supply and demand sides. By considering a topic as wide the housing market, there is no existing framework or theory that unifies these diverse perspectives. This is an obvious limitation of this paper. However, by segmenting the reviewed literature, a clearer way to analyze the problem emerges.

Figure 1

*Identified drivers of the young adult homeownership crises from the literature*




The summary presented is based solely on the entire reviewed literature pertaining to young adult homeownership. The relevance of each perspective is based on how frequently it was expressed in the reviewed literature and is reflected on the vertical axis. While this is not a perfect measure, it highlights which topics are most often researched and points to some emerging ideas. On the horizontal axis, the perspectives are placed on whether their impact on the housing market is primarily on the consumer demand side or on the supply of housing. This placement is based on the perspective's potential for impact on one side of the housing market, rather than on which side is analyzed in the literature.

Of course, many topics are broad and have sizable impacts on both sides of the housing equation. Although an imperfect overview, it succinctly summarizes the most relevant perspectives found in the literature relating to young adult homeownership challenges. By identifying a dividing-line in the drivers, the two sides of the analysis can each be compared to relevant theories and arguments. Importantly, this perspective portrays the homeownership challenges of young adults as a result of the imbalance between the supply and demand drivers. Potential solutions can more easily be targeted to either side.

Another benefit of segmenting the literature in this fashion is that it highlights knowledge gaps. In this context, it is interesting to note the lack of studies on the role and impact of innovation and technology. Innovation should be relevant in its ability to affect both the supply of and demand for housing. As this topic is an important part of this paper, relevant theories and studies are highlighted in the following section. Nevertheless, these works do not directly address the relevant problem of young adult homeownership but rather discuss the construction sector. To address this hole in the literature, special attention will be given to the role of innovation in the housing market and its potential to address the young adult homeownership crisis.

Despite the placement of some the subtopics on the supply side, there is a general lack of studies pertaining to the drivers of housing supply – let alone literature considering both demand and supply factors together – and the related effects on homeownership levels. The most common perspective on this side relates to the state's allocation of different housing types and policies to encourage citizens to pursue one form over the others. As discussed, this perspective is one of earliest in literature and newer perspectives, like education trends and generational dynamics, are only recently beginning to be studied. As the supply-side drivers are an integral factor in determining housing affordability, this perspective will be given greater consideration.

The closest approximation to a relevant framework is from Shiller (2000) who finds that long-term home prices in the US have remained relatively constant because of demand and supply factors. Shiller's argument is that the government alters land-use and other development regulations to increase housing supply when needed and, on the demand side, residents can abandon high-cost areas to move to cheaper locations. Moreover, he postulates that advancements in technology and processes in the construction sector will expedite build times and lower costs, thus increasing the supply of affordable homes. These factors will be considered in the paper and the unique framework considering the triad of interrelated factors – demand, supply, and the role of innovation – and their impact on the housing and homeownership markets will serve as a quasi-framework and will be relevant in the discussion.

## 3.4 INNOVATION FRAMEWORK

Related to the topic of homeownership is the role of affordable housing in helping young adults progress up the housing ladder. Also of relevance is the impact of innovation in the affordable housing sector and how these developments can alleviate the problems in the housing market. It is important to note that we are looking at these studies through the lens of innovation as a driver of housing supply and how it can help meet growing demand levels. The studies cited affirm that innovation is key in providing a pathway to affordable housing; however, to recognize how to make the greatest impact on the housing market, it is necessary to understand the respective organizations, firms, and business components that drive or hinder innovation and that embrace new methods and processes of homebuilding (Koebel, 2008).

Studies on innovation in homebuilding focus primarily on the pathway to innovation and the implementation of various new technologies. Residential construction companies have been chastised for following a business model that accepts complacency, which earns the industry the label of 'laggard' (Hassell et al., 2003). Further, few significant changes have been made in the construction industry and its methods since the Civilian Industrial Technology Program and the related operational breakthroughs in the 1960s. This program was meant to promote innovation by providing builders and developers with recently demolished land to produce low-cost units. Since then, the drive for innovation has slowed and companies have generally reverted to traditional methods of construction (Koebel, 1999). Baumol (1990) argues that innovation within the housing industry is greatly developed according to the 'rules on the game' and the reward structure of that specific economy.

Koebel (2008) argues that if innovation were to occur within the construction industry, it would be by smaller firms and that firms with greater funds are more likely to adapt to these developments afterward. Companies innovate based on what they deem to be most profitable. These innovations tend to satisfy the major needs of clients, which in this market are stated to be more "affluent" or "luxury buyers" (Koebel, 2008). In Koebel's (2008) ideology, if scaling-up means creating greater profit for companies that specialize in lowering the cost of housing that is durable and sustainable, more companies will innovate and create new ways to build. On the other hand, an abundance of small firms can be detrimental to the creation of affordable housing innovations. Having many independent constructing firms complicates tracking the research and development for certain innovations.

Koebel (2008) reasons that the existence of multiple firms may only foster sustaining innovation (i.e., only making small changes to the existing technology). Sustainable innovations improve on a specific area of an industry without fundamentally altering construction firms' practices. Companies tend to adopt new practices after they have been proven successful, which, in the construction sector, can be measured by the units developed from the system. In this scenario, a single firm cannot produce the requisite housing stock to impact the entire industry. Newly developed innovations must be evaluated by their compatibility to the existing industry. The industry is disenfranchised by design and building methods, which then become burdensome for the firms that are estimating the profit potential of a singular innovation (Oster & Quigley, 1977). According to Koebel (2008), the construction industry should aspire to develop disruptive innovation (Christensen & Raynor, 2003). To truly change the industry, Koebel (2008) notes that the whole system needs a transformation or needs to innovate to create totally new markets, known as 'creative destruction' (Schumpeter, 1944).

Koebel's (2008) research shows that in order to have more innovation within the construction industry, one must evaluate the elements that drive innovation. In this context, it is argued, that the elements are primarily the purpose of the technology being developed and the decision-making of the firms, as businesses must innovate to match their existing strategies. The strategies could include reducing the level of instability in the new housing market; the demand for affordable housing is very unstable, due in part to credit firms (Ball, 1999). Market instability makes it risky for developers to invest in and adopt new cost-efficient innovations. Since greater funds are needed to innovate, a market reliant on demand levels is viewed as a bad investment when the financial risk is high (Oster & Quigley, 1977).

The housing sector in the US is seen as archaic when compared to other parts of its economy and to foreign construction industries (Oster & Quigley, 1977). This study also indicates that educating the chief building official and then joining forces with other firms will foster the use of cost-reducing building techniques (Oster & Quigley, 1977). More entities should finance and develop laws that will encourage innovation within the homebuilding industry to create a substantial potential profit (Ball, 1999).

Historically, the innovation in products and building processes have been of secondary importance to speculative management and the profit demands of the unstable market (Barlow, 1999; Bramley et al., 1995). However, newer developments, like mass customization strategies (e.g., modular construction), drive experimental construction projects that provide an array of units in an efficient manner at an improved quality. For modular construction to evolve, the construction industry (i.e., the service) and the potential homeowner (i.e., the customer) must be satisfied with the outcome. The road to innovation is through technology that aims to building with quality and that is flexible and responsive to customizable needs (Brown, Gaze, & Roy, 2002).

Designs will have to be made with the consumer in mind and the spaces adjusted according to their needs. Maase and Dorst (2006) suggest that co-creation is a small but crucial part of developing and designing sustainable housing. Co-creation helps create exactly the space needed for the intended users and, in this context, the users are not only sources of information but also partners (Maase & Dorst, 2006). Creations formed with the input of the end-users appear traditional from the outside, but when inspected, the influence of the users is noticed in the internal layout and housing types (Ozaki, 2002). Examining building designs with the end-user helps to shed light on the structure of the system; this leads to concentrating on the structural design, learning from mistakes, and fixing structural problems rather than specific problems (Masse & Dorst, 2006). Homebuilders should also learn from their failures and adjust accordingly with the goal to build units that satisfy the inhabitants' exact needs (Ozaki, 2002).

## 3.5 CONCLUSION

The reviewed literature highlights clear and major challenges facing young adults attempting to become homeowners. The covered subtopics illustrate the complexity and interconnectedness of the drivers of the housing market and homeownership levels. Depending on the perspective of the literature, both the causes – from the demand and supply side – and potential solutions to the housing crisis differ. For that reason, a more holistic approach is needed to properly analyze the current problems of young adults in the housing market.

The policy goal of increasing homeownership implemented in many OECD countries over 50 years ago still exist today; however, a combination of economic, political, and social contexts complicates the situation and makes it difficult for young adults in the housing market and especially for potential homeowners. Although these problems have been exacerbated following the GFC, their foundations can be traced back to the changing structure of welfare regimes and the introduction of free-market housing policies in the previous decades. However, these explanations only partly explain the current situation.

In relation to the demand for housing, economic stability and job stability are currently low, especially for young adults, which make it difficult to save money and commit to homeownership. Partly as a consequence, the age at which people marry and form families is decreasing, thus postponing first-homeownership. At the same time, higher education is becoming more commonplace and expensive in many parts of the world, which further delays saving opportunities and transitioning up the housing ladder. As well, rising debts, primarily from student loans, negatively affect credit scores and the ability to secure mortgages, which were already facing tighter restrictions worldwide following the GFC. While existing homeowners and wealthy households benefited from these financial restructurings, young adults typically lacked the credit and capital to take advantage of low interest rates and falling house prices. Although these challenges affect young adults across the board, the effects are most pronounced for lower-income households and non-homeowning families.

These many micro- and macro-trends illustrate the growing problems facing young adults in the housing market and the difficulties in evaluating a single solution that does not account for the other interrelated factors, such as the effect of regional politics and financing for housing development. While increased enrollment rates in higher education bolster demand for homeownership, due to greater earning potential, this can also divert the labor force from pursuing skilled and unskilled labor jobs, which are an integral part of the construction industry. The aforementioned governmental policies and housing regimes dictate the type of housing available and the incentives – via tax breaks, grants, and housing allowances – to pursue one living arrangement over the other. The government's role is relevant on both the national and local levels, where housing crises typically exist.

Similar comparative case studies (see, for example, Castles & Ferrera, 1996; Forrest & Hirayama, 2009; Kurz, 2004) serve as templates for this paper. These works demonstrate an effective way to analyze and compare housing markets and homeownership levels across a limited number of countries. By focusing on the macro-contexts of the two countries, rather than specific policies or singular aspects, we can develop a more accurate understanding of the complex challenges facing each, as well as potential recommendations. Comparative studies of housing markets that sample entire regions (see, for example, Filandri & Bertolini, 2016; Lennartz et al., 2016; Lersch & Dewilde, 2013) utilize vast datasets to tease out specific explanatory factors but can lack the nuance we desire in this work. For this reason, as well as space constraints, we choose to focus only on a comparative study between two countries.

The selected countries, Denmark and the US, serve as apt selections for multiple reasons. First, the two have not been directly compared, as far as our reviewed literature indicates, other than in large international studies. Second, the two countries represent different welfare and housing regimes, which are common perspectives to analyze different countries' housing markets (see, for example, Forrest & Hirayama, 2009). Third, despite these differences, young adults in the two countries have declining homeownership rates, which indicates that there are factors affecting the situations that could be points of study. Fourth, these countries also have city-level housing crises that can be evaluated and compared. Fifth, the current and potential solutions in each country are potential learning opportunities for the other one.

As the reviewed literature shows, housing market challenges exist on a worldwide; however, the situations and attempts to address them vary immensely across country lines due to culture, welfare and housing regimes, policy responses, historical legacies, and other factors. More accurately, housing crises exist on regional and local levels. Thus, while the national perspective will be relevant, attention should also be given to the local level. Using a particular city as a case study allows for greater detail to be extracted regarding homeownership challenges and specific solutions and is common in this field of literature (see, for example, Andersen & Winther, 2010; Hochstenbach & Boterman, 2015). This micro-level perspective will complement the country-level macro-context to provide a complete picture of the housing markets for young adults in Denmark and the US.

As discussed, the historical paths of the housing regimes, along with the generational divides they create, play pivotal roles in shaping the current contexts. For this reason, special attention will be given to the trajectories of the two countries over recent decades in relation to today's markets. As well, with these historic trends, predictions can be made about their future paths.

Drew (2015) argues that literature that only considers data from around the time of the GFC represent atypical economic and housing market situations; whereas a longer-term view gives more weight to social and cultural trends and presents a picture of more normalized markets.

A relevant perspective so far unexplored in academic literature is the role of innovation in the construction sector and how it can be leveraged to alleviate the problems facing young adults in the housing market. In Shiller's (2000) seminal study showing that long-term house prices in the US remain close to constant, he argues that technological developments play a pivotal in expediting construction times and lowering building costs. This, in turn, increases the supply of low-cost homes and helps drive down prices. Despite the logical argument, there is very little academic work substantiating it and, for this reason, it will be a point of focus in this paper.

There appears to be a disconnect between housing developers and the current needs of the consumer. As well, building regulations may not be aligned with the needs of the consumer, which halts the supply of customizable construction. The current time needed to build does not foster customization in part due to the lack of innovation within the field and the unwillingness of firms to adapt to new technology (Ozaki, 2002). Koebel (2008) reasons that in order to have greater innovation within the construction industry, we must evaluate the elements that affect innovation. These elements include the purpose of the technology being developed, the decision-making strategies of the firms, and the need for innovation to be incorporated into this strategy. Residential construction innovation is entangled in external and internal factors that create a push and pull effect, both of which need to be addressed to make a change (Ball, 1999).

# 4. DATA AND METHODOLOGY

The analysis section of this paper was divided into two sections. The first portion established the influencers of the demand for homeownership in Denmark and the US based on long-term measurable trends. More specifically, this perspective looked at the changes in households' – with an emphasis on young adult households – willingness and ability to become homeowners relative to other forms of living. The second section focused on explaining the drivers of housing supply, along with the current challenges and potential solutions. This was done with interviews and questionnaires from companies, organizations, and industry experts working to alleviate the problems in the housing market. These perspectives provided background on the development and construction side of the housing market, which complemented the demand-side perspective presented in the first section. While the first section compared macro-trends on a national level, housing crises were found to exist on regional on local levels. The interviews created a relevant analysis that was rooted in the smaller-scale perspective.

## 4.1 DEMAND-SIDE PERSPECTIVE

The selected comparative measures in the first part were based on the drivers of the housing market and homeownership that were identified in the literature review. As there were already ample studies that focused on the correlations between different factors and homeownership levels, this paper instead looked at the general trends of these identified variables. As well, seeking to assign quantifiable cause to different factors was typically done in studies across many countries (see, for example, Filandri & Bertolini, 2016; Lennartz et al., 2016; Lersch & Dewilde, 2013), rather than in a two-country comparison. Thus, a time series analysis was employed – ideally over 30 years or as long as data are available – to see the changes in the housing market and how newer developments affected the ability of young adults to become homeowners. A longer time frame helped analyze the housing market beyond the irregularities of the housing bubble build-up of the early 2000s and the subsequent market crash, a perspective supported by Drew (2015). Of course, those periods had a lasting impact on the current housing market and including data from before and after the GFC provided a greater context of a more 'normal' housing market.

The term young adult varied by study and data source but, for the purposes of this paper, it was defined as an individual between the ages of 18-34. Depending on the database used, the analyzed age range varied but it typically landed in these boundaries. Occasionally, when age-specific data were not available, segmenting the population into income brackets was used as a proxy measure. Also, the definition of homeownership varied across countries and data sources. There are different types of home (e.g., house or condominium) and there are different degrees of financial ownership (e.g., a fully paid-off versus a non-paid-off mortgage), which made comparisons difficult. To alleviate these problems, cross-country datasets in which definitions were standardized across countries were primarily used. It was noted when different national data sources that used differing definitions of homeownership or did not segment by age and, in these situations, no direct comparisons could be made.

The bulk of the collected data came from the OECD collection of databases, which was derived from proprietary surveys and national and international sources. Within the larger compilation, Analytical House Price, Social Expenditure, and Affordable Housing databases were used. These datasets date back twenty to fifty years, which made it possible to compare the long-term trends of the two countries. As well, the 2016 OECD Questionnaire on Affordable and Social Housing (QuASH) provided valuable insights into the recent housing market developments and goals of the 29 countries surveyed. Limitations of this questionnaire were the relatively short time span covered and the gaps in reporting by many countries, which complicate long-term comparisons. Three other sources were used because of their reliability, long-term coverage without gaps, and specificity. The World Bank database provided information on the social expenditure on education and the population in metropolitan areas. The Bank for International Settlements offered historical data on the debt service ratios of households, which was used as a benchmark measure of the ability of the two countries' citizens to cover their debts and as a proxy for ease of obtaining a mortgage.

To obtain other measures that were not available in the aforementioned databases, country-specific sources were selected. These options provided wider and more granular measures; however, identical indicators were not always available for both countries, making direct comparisons difficult. In these situations, calculations were made to make them into similar measures (e.g., per 10,000 inhabitants or per capita) or left simply unadjusted. Other than these simple adjustments to indicators, all other data were unchanged. For Denmark-related measures, Statistics Denmark was used. This database includes both individual-level data and housing data for up to the past 50 years. Key segmentation variables included age, sex, type of living situation, ownership status, labor status, education attainment, and marital status. The ownership status of individuals is complicated because living in an owner-occupied property does not necessarily mean that the person is the legal owner him or herself. By considering a per capita and percentage of population approaches, a standardized comparison over time could be made. The Eurostat database was used for a single measure, the financial burden of households, which could not be found in any cross-country sources.

For the US, the primary dataset considered was the US Census Bureau. This is the largest statistical agency in the US and provides census data on the population and housing market, along with other surveys on individual and household characteristics. The ability to manipulate data based on individual characteristics to match the indicators found in Danish datasets was important. Similar to Denmark, key variables included age, sex, living situation, employment status, marital status, and economic indicators. A few metrics regarding housing cost burden by age in the US came from the Panel Study of Income Dynamics (PSID) and the PSID Transition to Adulthood (TA). This source was a longitudinal study on US individuals and families and included survey data on the transitioning of young adults. The surveys date back around forty years and track economic, housing, labor, and demographic data.

The macro-trends analysis was divided into four sections based on the identified drivers of the housing market that were found in the literature review. Although there were eight subtopics in the derived framework, they were consolidated based on similarity and due to space constraints; however, the most important arguments in each category were analyzed. The selected four drivers were the state's role, economic and financial indicators, labor market factors, and socio-demographic trends. The first section evaluated and compared the state's level of influence in the housing market. More specifically, assessed the importance of homeownership in comparison to other forms of living arrangements. Measures on social expenditure on housing, public spending on supporting social rental housing, and social housing stock as a percentage of total housing stock explained how the government supports, incentivizes, and normalizes different forms of living. The breakdown of government support via housing allowances to different forms of living arrangements can be understood as the state encouraging the various options. Specifically, housing allowance to renters is a representation of government support of the rental sector and indicates support for low-income households to gain rental housing. These metrics are commonly found in studies that evaluate the role of welfare regime and housing regime in relation to homeownership (see, for example, Arestis et al., 2009; Groves et al., 2016; Lennartz et al., 2016).

The second group considered a selection of economic indicators on the national and household levels. Measures of total outstanding residential loans to GDP ratio, total outstanding residential loans to the disposable household income ratio, and debt service ratio of households were all proxies for the liberalization of the mortgage market. Stricter mortgage criteria requirements make it more difficult to secure the necessary financing to purchase a home; however, household indebtedness can also hamper mobility up the housing ladder. To complement household debt levels, household net worth is included to demonstrate the assets and equity that households accrue from their loans. Beyond residential loans, household debt as a percentage of disposable income considered other forms of debt that limited their economic freedom and ability to purchase homes. The financial burden due to housing costs was a metric used to compare the affordability of living in the two countries. Although these metrics were available on a national scale, data segmented by age were not available. Despite this downside, national level data still demonstrated whether the overall economic environment was more favorable toward homeownership for all households, including young adults, and thus was useful for trend analysis.

The third category focused on historical trends in the labor market. Attention was given to labor participation rates, inactivity rates, and unemployment rates for different age groups across time. These trends indicated whether more young people are working, which built savings and credit at an earlier stage and facilitated the homebuying process. Job tenure length and labor market insecurity segmented by age were also evaluated over time. These labor market measures provided insight into whether young adults are less likely to remain at one job or location for extended periods of time, which could delay the decision to settle down as a homeowner. Annual income growth by age group highlighted the financial disparity between age groups over time.

The final category looked at socio-demographic factors that affected the ability and willingness of young adults to become homeowners. The first sub-group focused on educational factors measured by educational attainment of young adults over time, as Gyourko and Linneman (1996) found that higher education attainment has a positive effect on homeownership. To supplement this perspective, employment status by education attainment was considered to evaluate the reward for higher education in the form of better employment opportunities. However, the pursuit of education can increase the likelihood of renting and postponing homeownership. As well, the financing of education split between the state and private households was considered, along with the student loans required to achieve educational goals. Marriage trends, both in terms of mean age of first marriage and marriage age per 10,000, were highlighted to understand the connection between delayed marriage rates and homeownership levels. The growing dependency of young adults on inheritances and gifts from their parents was discussed as it was found to be increasingly relevant in the literature review. Metropolitan populations were cited, along with the housing cost burdens in these areas, to show the shift in geographic living situations of young adults. In addition, Case-Shiller Home Price Indices on national and metropolitan levels were given to show house price appreciation segmented by region.

After the four drivers were discussed, an overview of the current housing markets of the two countries was provided. These metrics were the crux of the analysis and can be seen as a product of the previous four general drivers of the housing market. Attention was given to homeownership affordability measures in the form of real house prices and house prices relative to income and rent prices. These trends indicated whether homeownership has become more unattainable over time for young adults. Additionally, increasing house prices could be a proxy for households' desire to invest in housing and for banks' willingness to finance such investments (Lennartz et al., 2016). The rental market was also examined with a rent price index and the rent price burden. This perspective revealed whether the rental market has become a more attractive living arrangement over time. House price-to-rent ratio is given as an index of home affordability and as a measure of the attractiveness of ownership versus renting. To conclude, homeownership levels segmented by age are presented for the two countries. Although the macro-contextual trends presented were on a national level, it was acknowledged that housing markets differ greatly on regional and city levels. To bolster this important point, regional house prices and affordability measures were presented. More in-depth local perspectives were elaborated upon in the following section.

## 4.2. SUPPLY-SIDE PERSPECTIVE

The second section of the analysis focused on investigating the drivers of the supply of housing in the US and Denmark. This was done to understand if the housing supply was meeting the changing demand identified in the first section. Further, the focus was on explaining the major challenges to bolstering housing supply and potential solutions to the highlighted challenges facing young adults in the housing market. In order to better understand the housing crisis, we reached out to different innovation leaders, companies, experts, and organizations operating in the housing sector to investigate the challenges and goals they were facing and how they were combating the issues of young adults entering the housing market.

Before reaching out to these groups, the innovation types were segmented into three different sectors: design and construction, finance, and policy and regulatory reform. These categories were provided by the 2019 Ivory Prize innovation competition. The Ivory Prize was based out of the David Eccles School of Business at the University of Utah. The competition joined the public and private sectors to tackle the affordable housing crises that are sweeping the US. The Ivory Prize innovation competition also stated that its focus was to get local leaders to play a role in the national debate on the importance of sustainable housing development. Upon further research on the competition, the Ivory Prize identified five ways that affordable housing innovation has emerged and ways to address innovation. The five criteria used to judge the valor of the innovation are:

1. Increase housing construction through innovation and technology to build faster, increase productivity, and lower costs.
2. Preserve and produce affordable housing in neighborhoods, building for the people and elevating strengths in that community.
3. Utilize creative finance approaches to allow more people to qualify for a mortgage and buy a home, and to build more affordable rental housing.
4. Innovative use of existing lots and homes to expand the numbers of accessory dwelling units to help fill the nation's housing demand and to increase income for homeowners.
5. Remove regulatory barriers at the city, state, and federal level – but especially in local communities to allow more homes and apartments to be built and to reduce the time and cost of building.

In this section of the research, we are shifting the focus to how firms are using innovative means to provide affordable housing to young adults. Our focus was the decline of young adult homeownership rates and the housing innovations designed to address this problem.

We investigated the top-20 award finalist list, sorted them, and then removed the companies that had very specific target markets in terms of for whom they developed affordable housing for (i.e., housing for the disabled and low-income families). In order to properly analyze this phenomenon, we generated a list of companies to interview and questions to ask them that related to young adults and their connection to affordable housing and homeownership. As well, their responses served as a groundwork to generate tools used to produce new concepts (Gioia, Corley, & Hamilton, 2012). The use of inductive research is to establish and expand our qualitative data with robust theoretical characterization (Gioia et al., 2012).

To understand the different phenomena within affordable housing innovations, we acknowledged our own biases, acquired more knowledge without interfering with our initial insights, and did not formulate constructs that made us oblivious to critical concept development (Gioia et al., 2012). The first step in our data collection process was to reach out to 26 different firms by email that fit our criteria of affordable housing innovation, each of these firms had to represent at least one of the categories previously mentioned. Four firms from the US Market agreed to speak with us – two from Design and Construction and one from Policy and Regulatory reform in the US. Our second step was to formulate questions for the interviewees or 'knowledgeable agents,' the persons who are knowledgeable about their organization's details, plans, and activities (Gioia et al., 2012).

As we scheduled interviews, we cultivated questions related to our initial research inquiries. We curated a list of relevant questions that were meant not to be leading to get the knowledgeable agents to respond in predetermined ways. These questions were distinct but related depending on which of three types of innovative companies we were interviewing. We decided on ten questions out of the initial 24 questions generated (Table 5). The reasoning behind this decision was to use our crafted questions as a reference point, rather than a concrete rule book. It was imperative that we diligently absorbed and altered our interview focus as we progressed, as the knowledgeable agents were the leaders of our inquiries that helped give meaning to our research questions (Gioia et al., 2012).

Table 5

*Chosen interview questions for the knowledgeable agents*

| Interview Questions | Research Purpose |
|---|---|
| 1. Are young adults a concern to your company? What percentage of your customers are 24-34 years old? | Business Model |
| 2. How do you define your target market? Age, demographics, gender, income levels? | Business Model |
| 3. What are the main obstacles that prevent young adults from becoming homeowners today? What does your company offer to help? | Consumer Needs |
| 4. What does affordable housing mean to your company? Is affordable housing important to the rates of homeownership and how does your company create value in the challenging housing market? | Innovation |
| 5. Is there anything that can be done to help young adults – who typically lack large savings, credit scores, and have student debts – to secure loans and buy homes? | Innovation |
| 6. With many young adults taking non-linear housing paths (e.g., to and from living with parents, renting, then owning), at what stage of this living process would it be most effective to help young adults? | Consumer Needs |
| 7. Is your business model driven by profit or is it socially motivated? How does that align with the mission of your company? | Business Model |
| 8. Although the housing challenges facing young people are evident internationally, the characteristics vary on a country and regional level. What is a policy or solution from elsewhere that could be beneficial to your target market? | Government Policy |
| 9. Does technology play a role in simplifying homeownership access for young adults? How important is technology in the innovation process for affordable housing? | Innovation |
| 10. How do you go about making changes? How do you prioritize what needs more attention in the current housing market? | Consumer Needs / Business Model |

We opted not to provide the initial interviewees in the US with our questions beforehand, as we desired an organic conversation that allowed us to adjust the line of questioning as needed. Though the interviewees efficiently answered all the questions during the phone interviews, it is possible that the unstructured conversational approach affected our capacity to synthesize the responses in a standardized manner. Providing the questions beforehand would have allowed our knowledgeable agents to identify missing critical information and may have us helped address our research questions.

As expected, the Danish housing market had different attributes compared to the US market, which forced us to analyze the two countries in different manners. The first step was to identify the most relevant and insightful companies in the field of affordable housing innovation, especially in relation to young adults and their capacity homeownership. There was a dearth of Danish companies that specifically targeted young adults and their access to homeownership. Therefore, our interview process with Danish companies and industry experts changed as we sent our questions in advance and adjusted the questions for each interviewee. As well, the questions were updated based on our findings from the interviews with the individuals in the US. Two companies preferred responding to our questions by email and one industry expert sat down with us for an in-person interview.

Upon finishing the interviews, we had to decide how to analyze the data. Each country had its own specific challenges in the affordable housing sector and potential solutions to help young adults in the housing market; however, for the purposes of our research, we highlighted the differences between the countries when possible. We translated one interview from Danish to English and we transcribed the over-the-phone interviews transcribed using the software Otter.ai. We used the software program NVivo to read through the transcriptions and identify themes. We observed that the interview data did not explicitly cover to young adults and their homeownership rates, but the collected responses discussed the supply-side drivers of the housing market. Further, the interviews examined the role of innovation in the construction sector, the subsequent potential impact on affordable housing, and how this could affect young adults in the housing market and their ability to become homeowners.

Table 6
*Main categories of affordable housing innovation*

| Major Categories | Associated Concepts |
| --- | --- |
| Business Model | What drives these companies to innovate and provide housing: consumer needs, profit gains, non-profit status, affordable rental units, rent or buy allocation, complicated supply chain, multiple interests |
| Construction | Barriers and innovations: building trends, denser buildings, living trends, technology developments, offsite manufacturing, customer-focused construction |
| Financing | Lack of available funding, source of funding, the barriers to receiving funds |
| Government Policy | Local level restrictions, public policy, community awareness, public resistance, slow changes to legislation, national versus local interests |
| Labor Market | Shortage of skilled-labor, effects on construction and renovation costs, skilled-labor incentives |

## 4.3 LIMITATIONS

The breadth of factors that affect the housing market and homeownership levels innately limited the depth to which each one was explored. Rather than isolate specific drivers of homeownership, this paper instead tried to evaluate the assortment of related factors affecting young adult homeownership over the long-term. This was done to better understand the homebuying climate for young adults today in relation to past generations. As well, this paper did not rank factors based on their magnitude of impact on homeownership, as many of the other cited studies have done, but instead discussed the long-term trends of the various metrics. With this approach, it could not be stated which problem was most severe and needed to be addressed to solve the housing challenges.

Another limitation was the absence of a unifying framework or theory identified in the literature review. This challenge relates to the first limitation in that the scope of this study was incredibly broad, which made it difficult to find an all-encompassing framework. However, the extensive literature review served as the groundwork for how to approach the analysis. As well, the formative work by Shiller (2000) demonstrated the importance of considering supply and demand drivers of the housing market, as well as the role of innovation; all three of which were discussed in tandem in the analysis. This perspective will serve as a framework when evaluating the long-term affordability of homes. In the absence of quantifiable data, theories and frameworks were more applicable in the analysis of innovation in the construction sector. These studies and concepts were examined in the literature review.

One shortcoming was the lack of age-segmented data for all the indicators. Metrics like mortgage availability and household indebtedness varied by impact across age groups, but only comparable national-level data were available. However, by looking at the trends over time, an argument could still be made whether homeownership was becoming more or less feasible and attractive for the general population. When possible, metrics segmented by income were used as imperfect proxies for age.

One limitation to the approach was the fact that housing crises exist on regional and local levels more so than on a national level. The choice to compare the housing markets of the two housing markets was dictated by the availability of comparable data, which was most easily found on the national level, and the argument that housing markets were largely shaped by national policy objectives, state welfare regime types, and national mortgage practices. Importantly, the company interviews served to compensate for the lack of macro-contextual data on the local levels. These interviews attempted to discuss what companies operating on a smaller scale were doing to counteract the nation-wide trends highlighted in the macro-analysis. A more complete picture of the housing markets and issues facing young adults was formed by supplementing the national data with local-level insights.

An underrepresented component was quantifiable data on the role of the construction industry in the housing and homeownership markets. This was attributed to the absence of studies relating to the connection between young adult homeownership and the construction sector found in the literature review. Further, publicly-available data were limited in this sector. To counteract this shortcoming, building cost metrics were considered and it could also be assumed that some of these factors manifested in the form of home prices. More importantly, interviews with companies operating within the construction sector and industry experts provided valuable insight into this area. The supply of housing was evaluated primarily with these sources.

Due to space and time constraints, the perspective of the end-user (i.e., young adults) was not covered. Gaining insight into the challenges faced by young adults, as well as their housing needs, would have provided a key viewpoint in this discussion. Further, it would have enhanced the implications for developers by giving them more specific details about what housing for young adults should look like. Despite lacking the individual's perspective, the thorough data provided on the demand side for housing indicate the overall trends of young adults in the housing market.

There were limitations in regard to data collection. The first limitation was sample size – we reached out to 32 corporations and the response rate was 2.2 percent, which was smaller than anticipated. A larger sample size might have provided wider insights into the housing market and potential solutions. It was challenging to identify companies working on a national level, which could have been useful to explain the country-level trends found in the macro-analysis, as most companies operated on a local level. Since housing markets and their respective challenges and solutions differed between cities, it was difficult to make direct comparisons between the ideas found in the interviews. The second concern was receiving biased responses to our interview questions. We aimed to ask non-leading questions to our interviewees and sought out data to substantiate the claims they made.

The third challenge related to the language barrier of contacting Danish companies and finding data on the Danish housing market. Only one interviewee responded in Danish while the others communicated in English, which lessened this limitation. However, we cannot conclusively determine whether the lack of innovation-based companies operating in the Danish housing market was due to our inability to pinpoint them or just their absence in the country. Desired comparisons of the role of innovation in the two countries were thus limited, but that was in part due to the nature of their respective housing markets and social housing structures.

# 5. ANALYSIS

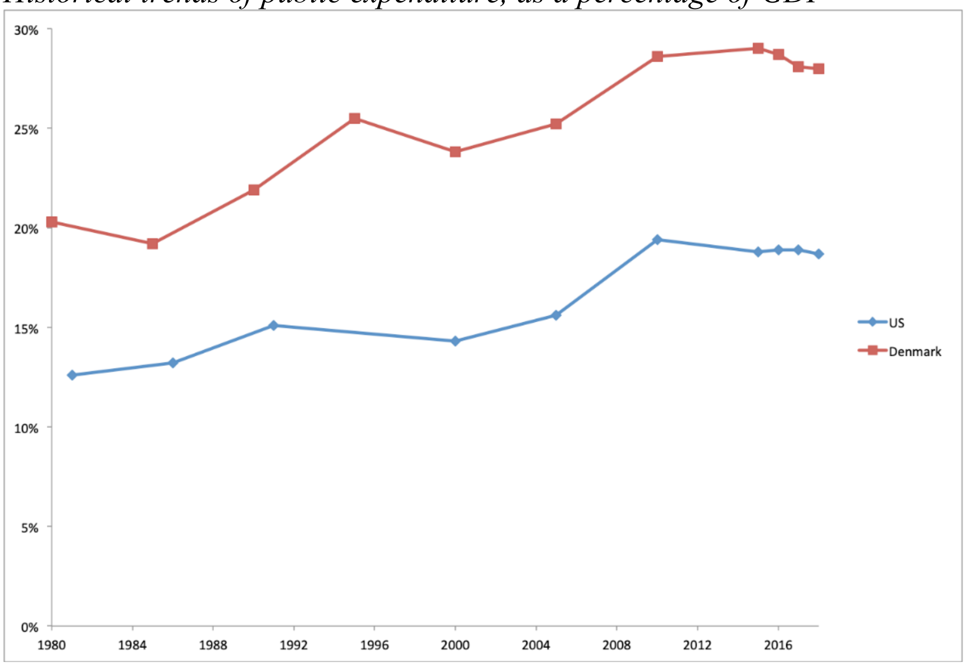
## 5.1 THE DEMAND FOR HOUSING – A NATIONAL PERSPECTIVE

### 5.1.1 STATE INFLUENCE

This section aims to explain the two states' changing influence in the housing market and how they are incentivizing different forms of housing. Of the four drivers to be evaluated, the state's role is the most rigid over time because it adheres to the entrenched housing and welfare regimes. The robustness and state support for the three primary living arrangements – ownership, private rental, and social housing – will be evaluated. This segmentation ignores the nuances within living types (e.g., homeownership by different levels of mortgage indebtedness) and fringe segments like co-operative living arrangements in Denmark. Homeownership can inherently be encouraged by the reduction in state support for the other two general forms of living.

Starting with a broad albeit crude metric, it is necessary to compare the two countries' public expenditures to understand the split in responsibility between the state and individuals. Generally speaking, countries with higher public expenditures levels provide greater social services, whereas lower expenditure levels signify a greater burden on individuals to provide for themselves. Because of the growing value of homes relative to other assets in households' portfolios, homeownership is one of the main forms of financial self-protection.

Figure 2
*Historical trends of public expenditure, as a percentage of GDP*




*Source:* Data from OECD (2018d)

The discrepancy between social spending levels is evident and persistent over time; it demonstrates the inertia in social welfare regime types and fits the archetypes of the social democratic welfare regime in Scandinavia and the liberal type in Anglo-Saxon nations. Both countries demonstrate a marked increase in public expenditures following the GFC in 2007-2008. Public expenditure can be further segmented into more detailed categories. In the most recent OECD data available (2015 for Denmark and 2016 for the US), Denmark allocated 8.1

and 6.6 percent of its GDP to pensions and all social services excluding health, respectively. In the US, the numbers were 7.2 and 1.3 percent of GDP, respectively. In OCD countries, public expenditure on housing is the lowest among all social policy areas. Further, the annual growth rate in spending in this category dropped from over eight percent in 2005-2009 to below one percent in 2010-2013/14 (OECD, 2018d).

Table 7
*Historical public expenditures on housing levels*

| | | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|
| Public spending on housing (% of total public spending) | Denmark | - | - | - | 1.30 | 1.20 | 1.30 | 1.20 | 1.30 | - |
| | United States | 0.56 | 0.72 | 0.73 | 0.91 | 0.84 | 0.80 | 0.91 | 0.69 | 0.69 |
| Public spending on housing (% of GDP) | Denmark | 0.37 | 0.45 | 0.63 | 0.75 | 0.65 | 0.69 | 0.67 | 0.70 | - |
| | United States | 0.19 | 0.26 | 0.27 | 0.34 | 0.28 | 0.29 | 0.39 | 0.26 | 0.26 |

*Source:* Data from OECD (2018d)

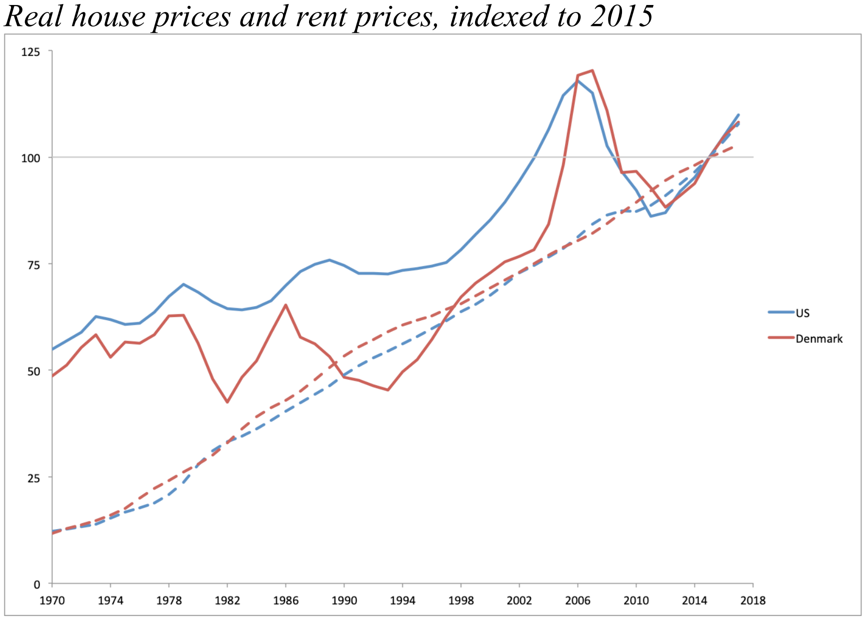
In Denmark, public expenditure on housing started at .4 percent in 1980, grew to .6 percent in 1990, and .7 percent in 2005 where it now remains. In the US, the values were .2 percent, .3 percent, and .3 percent at those three same time-marks. In the eight years following the financial crash, Denmark had an annual growth rate of expenditure on housing and social exclusion of 7.8 percent compared to only 1.8 percent across all social protection categories. The average annual growth rate in the housing category was only 1.9 percent in the European Union over that time (Eurostat, 2019). Per the findings cited in the literature review, weaker social services can be a motivating factor for individuals to pursue homeownership as a form of self-protection against economic shocks and job loss. Thus, the lower social expenditures in the US is one driver of the higher rates of homeownership and is relevant as both countries are slowly beginning to revert toward pre-crisis public spending levels.

In the social housing sector, the US' stock of social housing decreased from 1.14 million units in 1993 to 1.02 million units in 2016. This despite the fact that there is a growing demand for these affordable units. In Denmark, social housing grew from 15 percent of the total housing stock in 1960, to 19 percent in 2000, to 20.9 percent in 2017 (OECD, 2018a). Denmark's social housing stock level is one of the highest of OECD countries and it remains an important part of its housing market. The robustness of Danish social housing demonstrates that it is a more accessible and viable alternative to homeownership than in the US. While difficult to quantify, the stigma associated with living in social housing is in stark contrast the ideal of homeownership found in the 'American Dream' (Priemus, 2000; Priemus & Dieleman, 2002).

Although the private rental sector is largely free-market driven, national and local level governments still have immense influence over it via rent control policies, building regulations, and sway over the housing supply. Over the past five decades, both countries have experienced dramatic increases in private rent prices.

Figure 3

*Real house prices and rent prices, indexed to 2015*




*Notes*.
1. The solid lines represent real house prices. The dashed lines represent rent prices.
2. Real house price is the ratio of nominal price to the consumers' expenditure deflator in each country, both seasonally adjusted.

*Source:* Data from OECD (2018b)

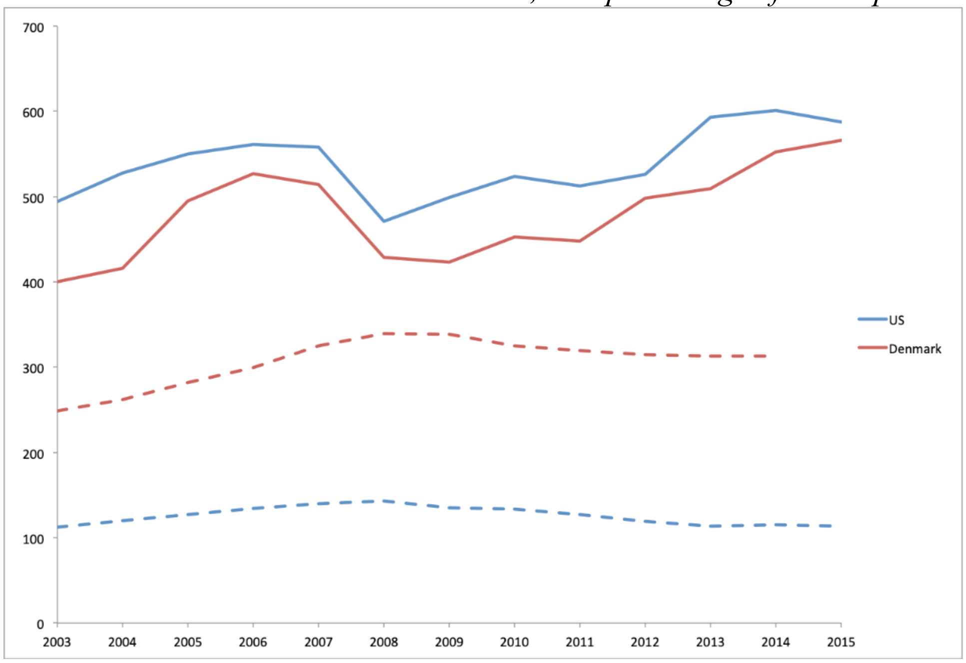
Although house prices follow a more boom and bust cycle, rental prices generally increase at a consistent rate. Since the prices depicted are indexed, the affordability of the two living options are not directly comparable; however, the growth of rental prices is more drastic compared to home prices. This aligns with Shiller's (2000) argument that home prices, despite short-term deviations, generally proximate their long-run averages.

In regard to housing allowances to renters, the average year-over-year growth from 1991-2016 of means-tested benefits given to Danish renters was 1.64 percent. The allocation of rent benefits has generally slowed in recent years, but the overall government support of the rental sector is an indicator of providing housing opportunities for low-income households. In the US, only four percent of the population receives cash allowances for rental costs, compared to 9.7 percent in Denmark (Andrews et al., 2011). Further, the US spends roughly .5 percent of its GDP supporting access to homeownership, primarily through tax relief policies and grants. While these subsidies are widespread, the US' mark is one of the highest in OECD countries surveyed (OECD, 2017c). The difference in subsidies to different living arrangements inherently encourages one form over the others.

### 5.1.2 ECONOMIC AND FINANCIAL INDICATORS

The financial indicators focus both on household and national perspectives. One aim is to evaluate the liberalization of the mortgage market and the associated levels of household debt. As well, this section identifies household financial burdens due to loans and housing costs. These metrics will illustrate the changing level of living and housing affordability levels and the ability of families to secure the financial means to become homeowners. Although age-segmented data are not always available, young adults tend to be more indebted than older adults due to receiving lower income rates and having paid off a smaller portion of their mortgages and other loans. As well, income-segmented data are used, when available, as a proxy for age. Beginning with a broad metric, household debt measures are considered to compare household borrowing burdens over time.

Figure 4
*Household net worth and household debt, as a percentage of net disposable income*



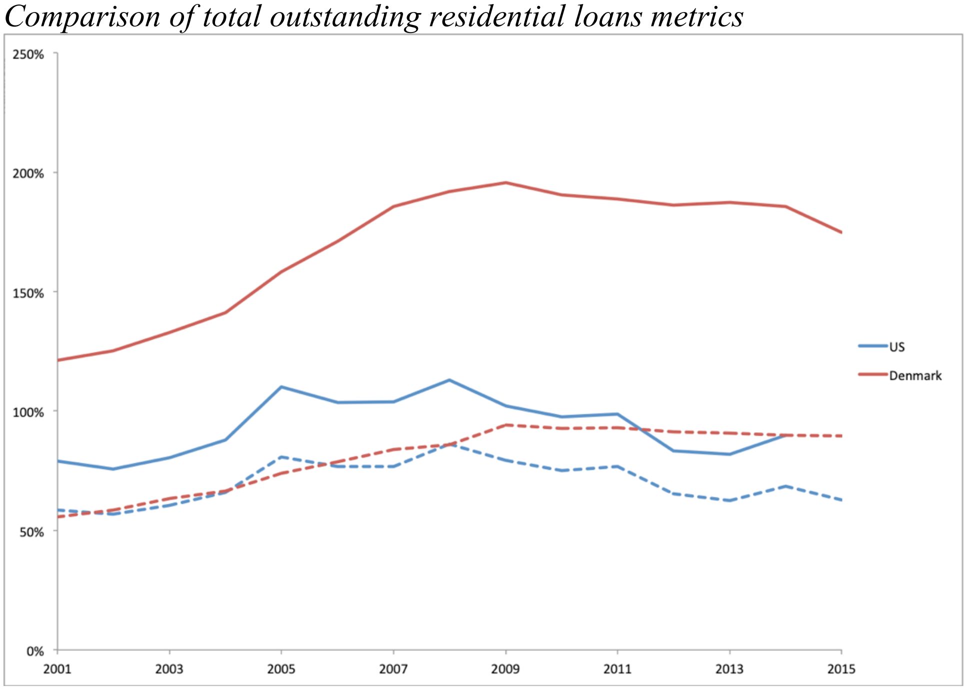

*Notes.*
1. The solid lines represent household net worth. The dashed lines represent household debt.
2. Household net worth is composed of total assets (financial plus non-financial assets) less the total value of outstanding liabilities recorded at current market values.

*Source:* Data from OECD (2018b)

The graph clearly indicates that Danes have more access to loans and indebtedness is more normal in their country in comparison to the US and also most other OECD countries. However, the household wealth metric shows that the two nations have similar asset holdings. Under closer examination, Denmark has one of the highest household assets levels due primarily to large private pensions. These robust pensions allow Danish households to carry heavy debt burdens during their working years because they will continue to earn high incomes following retirement.

The huge spike in borrowing predating the GFC, especially in Denmark, is noteworthy as is the general reversal to more normal levels in the years following. While many of these loans in the early-2000s were to support homebuying efforts with the belief that prices would continue rise, the elevated prices at which people bought in have left many in difficult financial predicaments after the housing market crash. As the average age of first-time homebuyers is around 30 (Lautz, 2011), large shares of the homebuyers that bought in at the peak and then suffered the greatest financial impact were young adults. These households were then stuck with loan payments for homes that suffered massive valuation drops. Although the previous graph included all household debt, it is important to look specifically at debt due to home loans, which is by far the largest contributor to overall household debt.

Figure 5
*Comparison of total outstanding residential loans metrics*




*Note.* The solid lines represent the ratio of total outstanding residential loans to the disposable income of households as a percentage. The dashed lines represent the ratio of total outstanding residential loans to GDP as a percentage.
*Source:* Data from OECD (2018a)

The two different metrics can be seen as proxies for mortgage accessibility in the two countries. The top line indicates that Danish people carry large mortgage burdens relative to their disposable incomes and still face little resistance when borrowing. The debt-service ratio (DSR) is a similar measure, consisting of interest payments plus debt amortizations as a proportion of income. In 2017, Denmark had a DSR of 15.4 percent compared to 7.9 percent in the US, which reinforces the data shown above (Bank for International Settlements, 2018). On average across Europe, mortgage debt relative to GDP grew following the GFC; however, this is in large part due to the many countries experiencing substantial economic downturns in those years. The US and Denmark experience slight dips in this timeframe in large part due to disruptions in their mortgage markets, especially in the US where securitization problems arose.

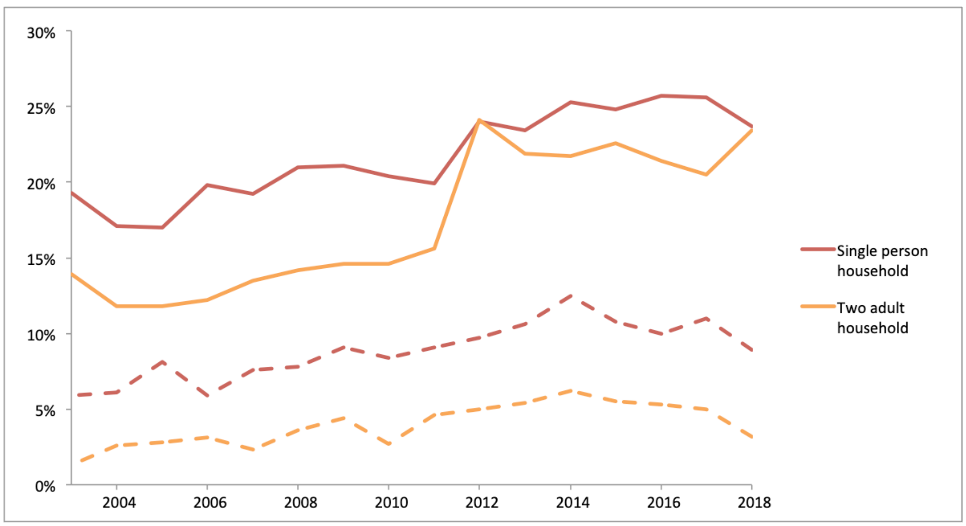
The other indicator considers residential loans to household income. The fall in this metric in Denmark is notable because the decrease in mortgage debt was greater than the decrease in household income following the GFC. One point of differentiation between the two nations is the mortgage types offered. The prevalence of variable interest rate mortgages in Denmark, compared to the standard fixed-rate offerings in the US, meant that actual monthly payments might have fallen due to the drop in interest rates and low inflation levels after the GFC. The different mortgage types partly explain the vast difference in default rates – the average default rate from 2000-2014 was .26 percent and 5.18 percent in Denmark and the US, respectively.

Other explanatory factors, of course, were the wider systemic problems and the massive subprime mortgage market in the US compared to the more moderate economic problems in Denmark. Additionally, older adults who had paid off a larger share of their mortgages would have been less affected than young adults who accepted mortgages at higher fixed-rates prior to the market collapse. These data expose the challenges facing existing mortgage-holders in the wake of the economic crisis; however, these metrics are not sufficient to make a claim about the difficulties of becoming a homeowner, especially for young adults.

Beyond the mortgage market, it is important to evaluate the trends in housing costs both for homeownership and private renting. The private rental market is especially significant because it is dominated by young adults and is classically labeled as the first rung in the housing ladder on the way to homeownership.

Figure 6

*Percent of households with moderate and heavy financial burdens due to housing costs in Denmark*




*Note.* The solid lines represent households with moderate financial burden (30-49 percent of gross income) due to housing costs. The dashed lines represent households with severe financial burden (>50 percent of gross income) due to housing costs.

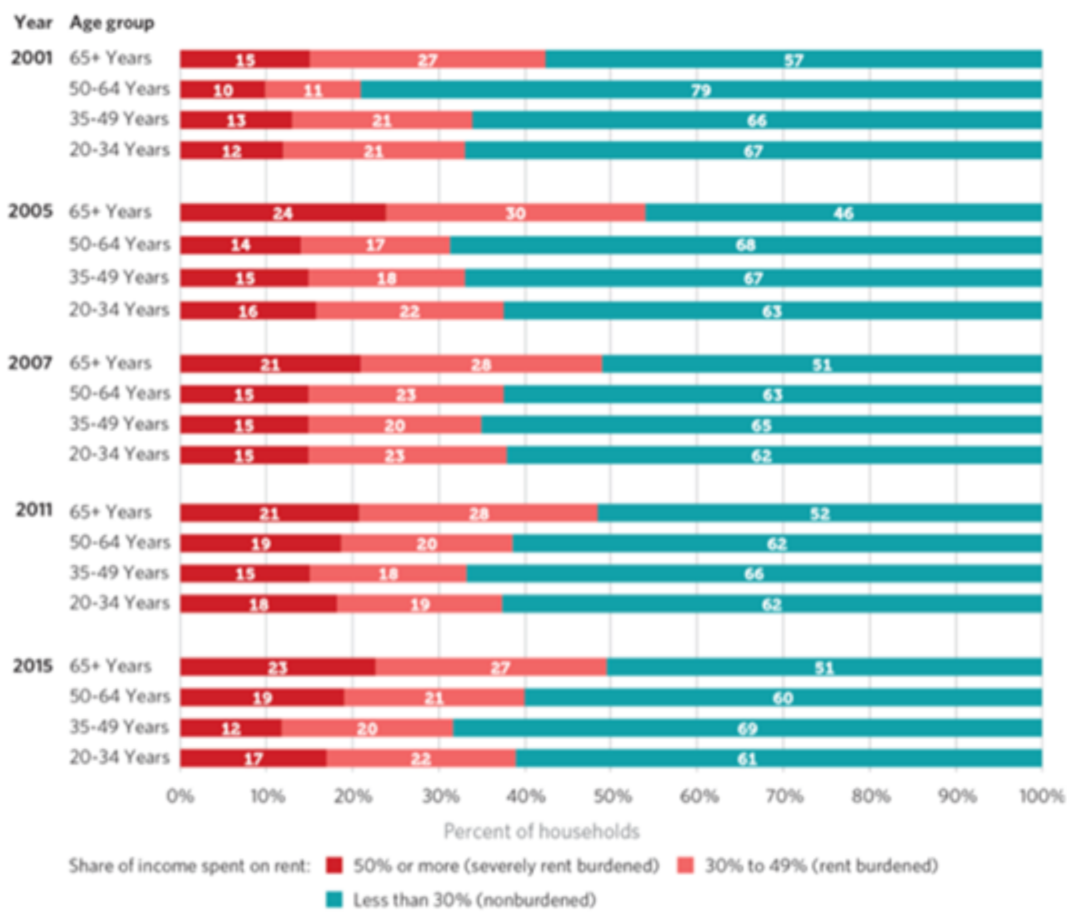
*Source:* Data from European Union Statistics on Income and Living Conditions (EU-SILC) (2018)

The distinction between single and two adult households is made as a general proxy for age, as individuals typically transition to two adult living arrangements at the end of their young adult stage. With this perspective, it is worth noting the massive rise in households with moderate financial burdens. Spending a greater deal of earnings as a young adult, who are typically renters, can prevent the accumulation of savings (as will be shown next) and delay the pursuit of homeownership. The increasing financial burden of two adult households, which does not necessarily mean dual-incomes, also shows the general decrease in housing affordability. Moreover, two adult households that could afford to own homes in earlier years may now be stuck renting for longer to build up the necessary savings to make down payments.

In the US, data segmented by household type were not available; instead, data is presented on rental costs grouped by age. This is relevant to young adult homeownership because the demographics of renters are skewed toward a younger age and because of its important stage in the transition to homeownership.

Figure 7

*Percent of households with varying financial burdens due to rental costs in the US, segmented by age*



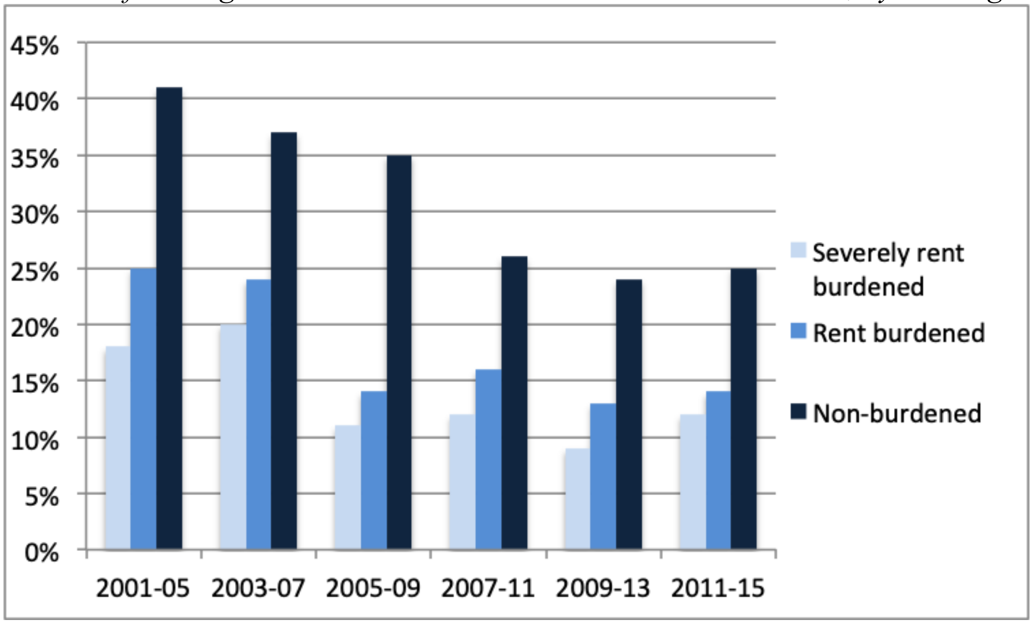
*Source*: Reprinted from Pew Research Center. (2018). *American families face a growing rent burden*. The Pew Charitable Trusts. Copyright 2018 by The Pew Charitable Trusts.

The housing cost burden in the US depicted above are slightly below the values in Denmark, but the Danish calculations also include housing costs for owners, which tend to be higher than those for renters. The greatest increase comes to households facing heavy housing cost burdens, especially to the oldest age group. Similarly, young adults saw a five percent increase in households with heavy housing cost burdens and in 2015 this group had the smallest share of non-burdened households of any age group. One explanation: from 2001-2015 inflation-adjusted median household income rose much less than the rental rates. As young adults are early in their careers, they typically have incomes in the low to medium range. Over this same time period, owner households accrued $3,000 more in assets, non-burdened renters $200, and burdened renters $3 (Pew Research Center, 2018).

It is important to note that in the US the highest percentage of renters – 58 percent – is found in the bottom quintile, with the level decreasing to 35 percent in the middle and 13 percent in the top. With decreasing home and rental affordability, plus stagnating low and medium wages, it seems that it is primarily low-income households that are increasingly unable to progress from renting to owning. Indeed, the following chart highlights the increasing difficulties surrounding the transition to ownership.

Figure 8

*Percent of renting households that became homeowners in the US, by housing cost burden*




*Notes*.
1. Data are based on the number of renters with a head of household ages 21-34 that started as a renter and then transitioned to ownership within the four-year time period.
2. Severely rent burden represents spending >50 percent of gross income on rent. Rent burdened represents spending 30-49 percent of gross income on rent. Non-burdened represents spending <30 percent of gross income on rent.
*Source*: Adapted from Pew Research Center. (2018). *American families face a growing rent burden*. The Pew Charitable Trusts. Copyright 2018 by The Pew Charitable Trusts.

The classical housing ladder path typically consists of leaving the parents' house to live in a rental property before eventually saving up enough to purchase an inexpensive home with the hopes of eventually being able to afford a nicer home later on in life. In Denmark, the trajectory is roughly the same, as only 20 percent of young people and 33 percent of young couples, move into owner-occupied homes after moving out from their parents' residence (Kristensen, 2007). The graph above depicts the challenges in following this traditional living path for all households, not just severely rent burdened ones. The percentage of young adults (ages 21-34) that shifted from renting to owning dropped from 26 percent to 16 percent over 2001-2015 (Pew Research Center, 2018). Even the most likely cohort become owners – represented by the non-burdened renters – dropped from 41 to 25 percent over this time period.

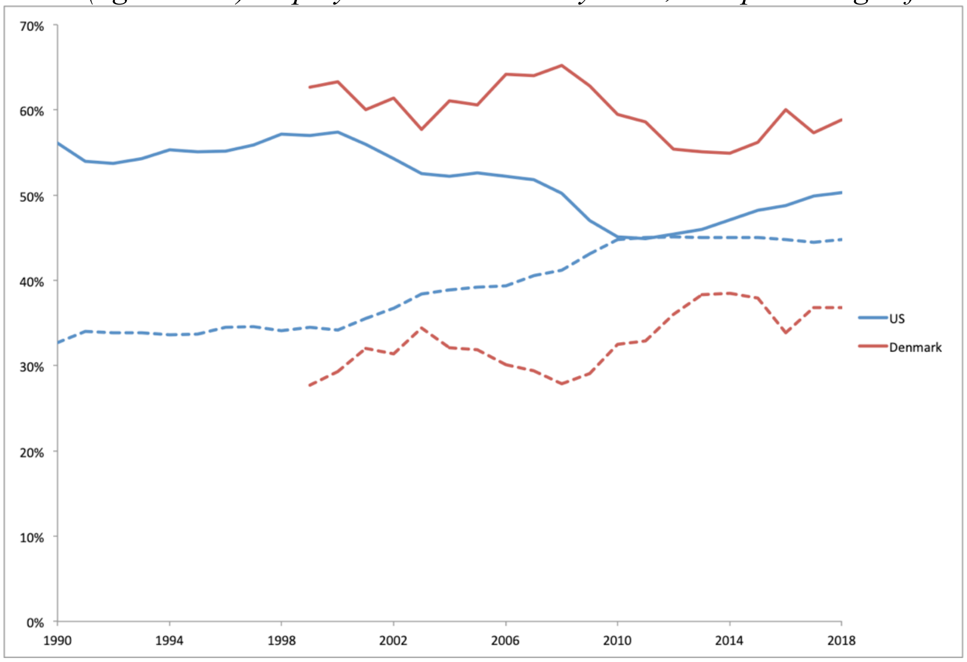
Of course, the financial crisis had major and marked impacts on the downward trend, but the most recent period shows slight improvements in all three categories and the lack of more recent data make it difficult to determine whether this uptick will continue toward the pre-crash levels. In comparison to the beginning of the 2000s, these insights show that renters – especially rent-burdened ones – in the US are struggling to build the savings and assets necessary to acquire homes. While the same data are not available for the Danish market, the previous graphs depicting the increase in households with severe and moderate housing cost burdens paint a similar picture. Although the data and trends depicted do not pinpoint root causes, they demonstrate growing economic and financial burdens, which hamper the upward mobility of households, especially low-income and severely burdened ones.

### 5.1.3 LABOR MARKET FACTORS

The labor market is inextricably linked to the previously described government and financial sections. Nevertheless, it is crucial to evaluate the trends in the labor market, especially in regard to young adult employment rates and income levels. These indicators demonstrate the ability of young adults to build savings at an earlier age in order to financially support themselves and eventually afford homeownership. Moreover, these data are segmented by age and income groups, which demonstrate how housing market challenges are unequally affecting different social groups. As well, job stability and duration measures give an insight into the relation to the willingness and ability of young adults to settle down in one location via homeownership. The first metrics to analyze relate to youth labor participation rates.

Figure 9

*Youth (ages 15-24) employment and inactivity rates, as a percentage of the youth population*




*Notes*.
1. The solid lines represent employment rates. The dashed lines represent inactivity rates.
2. Inactive defined as a person not employed or unemployed and who is not looking or available for work.

*Source:* Data from OECD (2018b)

In the past two decades, both countries have experienced slight decreases in youth employment rates, with pronounced drops following the financial crisis. Lower employment rates can indicate signify that youths are less financially independent and start to build their savings at a later age. Not pictured on the graph are unemployment rates for the same age group. From 1998-2018, the unemployment rate went from 9.5 to 9.4 percent in Denmark and 10.4 to 8.6 percent in the US, although both countries saw around numbers around 50 percent higher than these levels in the recession years. Thus, while the ability of young people to secure jobs has been relatively stable in the long-run, inactivity rates have been rising. One explanation for the lower labor participation rates has been the related increase in education enrollment rates, as younger adults often pursue continued or additional education to mitigate unemployment risks during unstable labor market periods.

Although the trends are far more pronounced in Denmark, both countries have experienced a growth in higher education enrollment over the last ten years. From 2005-2016, the rate of enrollment in a bachelor's or equivalent level program increased from 57 to 71 percent in Denmark and from 27.7 to 33.4 percent in the US. For master's level degrees, enrollment increased by 13 percent in Denmark from 2005-2016 and remained at 13 percent from 2010-2016 in the US (OECD, 2018b; US Census Bureau, 2019). The positive effect on homeownership rates from increased educational rates is well established (see, for example, Gyourko & Linneman, 1997). However, in the short-term, the rental sector grows as more young adults live temporarily in the areas surrounding universities while studying (Lennartz et al., 2016). As well, spending longer in education can also delay the entry into the workforce, family formation, and homeownership. As more young people are pursuing higher education instead of working, this could be a sign that they are sacrificing short-term incomes in the hopes of elevating their future earning potentials following the completion of their degrees. By this logic, many young adults are simply delaying homeownership rather than abandoning the pursuit altogether.

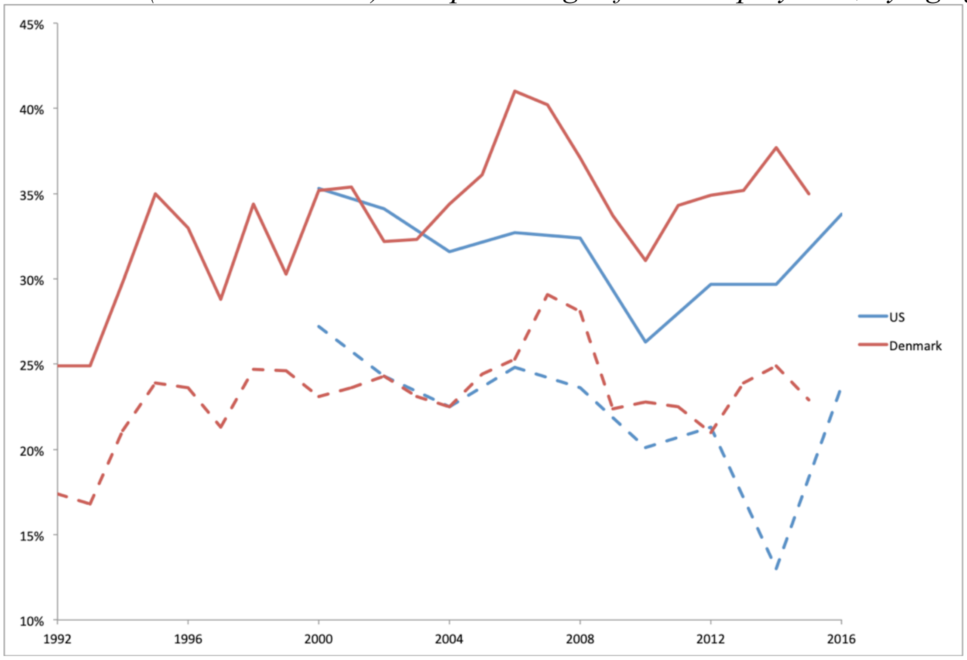
One major hindrance to homeownership that is relevant in the US is the cost of higher education and the associated burden of student loan debt. In Denmark, this is not relevant as almost all higher education programs are free to nationals. Now the second largest type of household debt behind only mortgage debt, there are over 16 million borrowers (under the age of 30) with an average loan debt of nearly $23,000, up from 11 million borrowers with an average loan debt of $13,000 in 2004 (Federal Reserve Bank of New York Consumer Credit Panel, 2018). Over 80 percent of Millennials delayed home buying due to their student loan debts. Moreover, in a survey, 32 percent of Generation Z and 17 percent of Millennials cite student debt as the largest obstacle to buying a home (Theiss, 2018).

Historically, the homeownership rate for thirty-year-olds who had accrued student debt was higher than those without student debt. During the housing boom of the early-2000s this gap expanded; however, following the recession this trend reversed and by 2012 the homeownership rate for student loan debtors was 2 percent lower than for those without loans. Relatedly, the credit scores for young adults with and without student loans were similar in the early-2000s but by 2012 the average credit score for a 25-year-old without loans was 15 percentage points higher than for one with loans and the difference was 24 percentage points for 30-year-olds (Federal Reserve Bank of New York Consumer Credit Panel, 2018). Partly in response to these developments, Freddie Mae and Freddie Mac, the two US government-backed mortgage re-insurers, implemented loan benefits for first-time buyers and decreased the required down-payment amount from five to three percent in 2015.

On top of the financial challenges facing low-income households that were previously cited, individuals from these economic backgrounds are less likely to pursue higher education, which further lowers their ability to eventually become homeowners. In the wake of stricter mortgage lending practices, student loan debtors with worse credit scores now face a greater challenge becoming homeowners, despite the higher earning potential that they have because of their degrees. Even after receiving degrees, young adults have relatively short job tenures.

Figure 10

*Job tenure (under 12 months) as a percentage of total employment, by age group*




*Note*. The solid lines represent the ages 25-29 group. The dashed lines represent the ages 30-34 group.

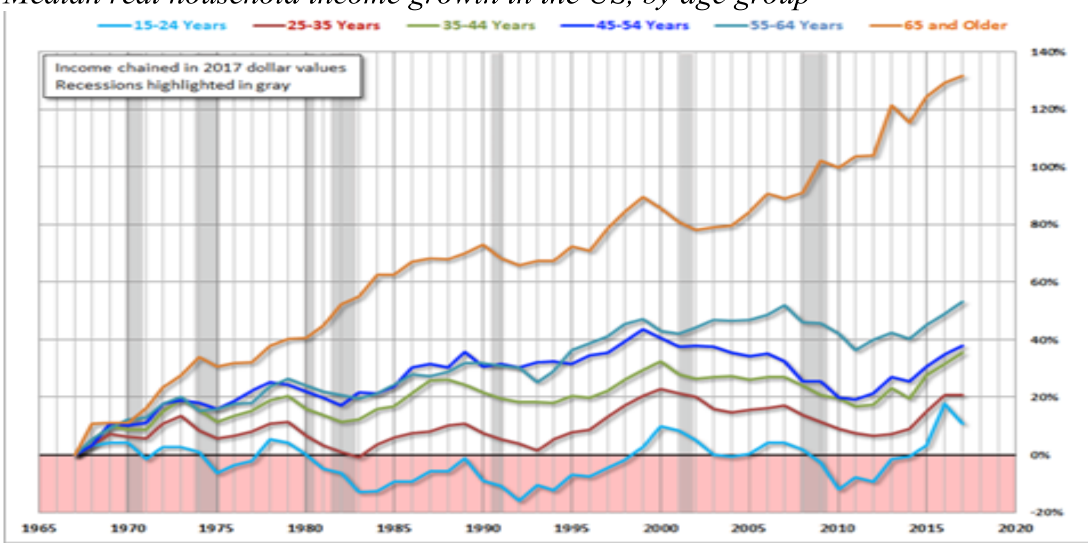
*Source:* Data from OECD (2018b)

Although the data for the US job market is more limited, the long-term trends in the Danish market are more pronounced – young adults today are more frequently staying at their jobs for a short period of time (under 12 months) now than they were in the early-1990s. There is also a clear positive relationship between the overall health of the economy and the willingness of young adults to seek and switch to other jobs. Young adults (ages 25-34) in the US stay with their current employer for an average of 2.8 years, compared to their Baby Boomer counterparts who stay for over 10 years (US Bureau of Labor Statistics, 2019).

Similarly, labor market insecurity – defined by the OECD as "the risk of becoming unemployed and its expected cost as a share of previous earnings" – has dramatically increased for the ages 15-29 group. From 2007-2015 the metric went from 2.41 to 7.01 in Denmark and from 8.28 to 13.57 in the US. The worsening job security measures and related shortening of job tenures are also motivating factors for young adults to choose to rent rather than settle down and own. In fact, Millennials in the US cite job security as one of the largest obstacles to buying a home (Theiss, 2018). As job security and tenure length generally increase with age, older adults are more willing and able to commit to the long-term risks and benefits of homeownership. In the US, homeowners are around 20 percent less likely to move than private renters and in Denmark, the figure is around 6 percent (Andrews et al., 2011). Of relevance to affordability of homes is the change in income level by age groups.

Figure 11

*Median real household income growth in the US, by age group*

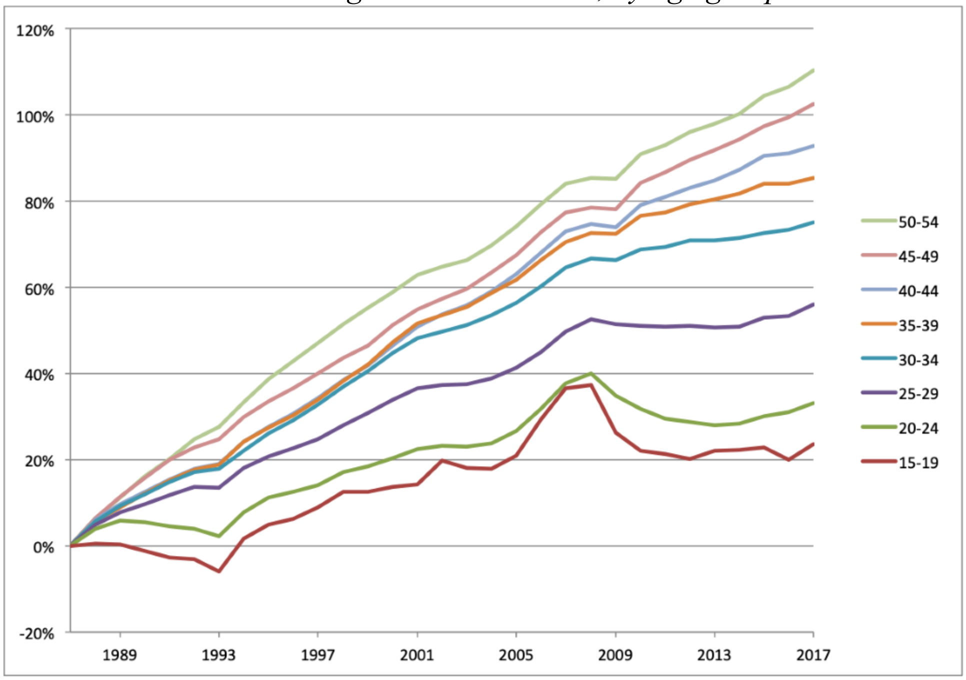



*Source:* Reprinted from Mislinski, J. (2018). U.S. household incomes: A 51-year perspective. Advisor Perspectives. Retrieved from https://www.advisorperspectives.com/dshort/updates/2018 10/16/u-s-household-incomes-a-51-year-perspective. Copyright 2018 by Advisor Perspectives, Inc.

The general trend is apparent and noteworthy – the increases in income levels for young adults have not kept up with those for older age groups. When compared to the rise in rent costs – the average rent cost in the US increased by almost 50 percent from 2001-2015 (Pew Research Center, 2018) – and home prices during the same period, it provides another explanation for why young adults are struggling to afford homes. The same pattern exists in Denmark.

Figure 12

*Median individual income growth in Denmark, by age group*




*Source:* Statistics Denmark (2019)

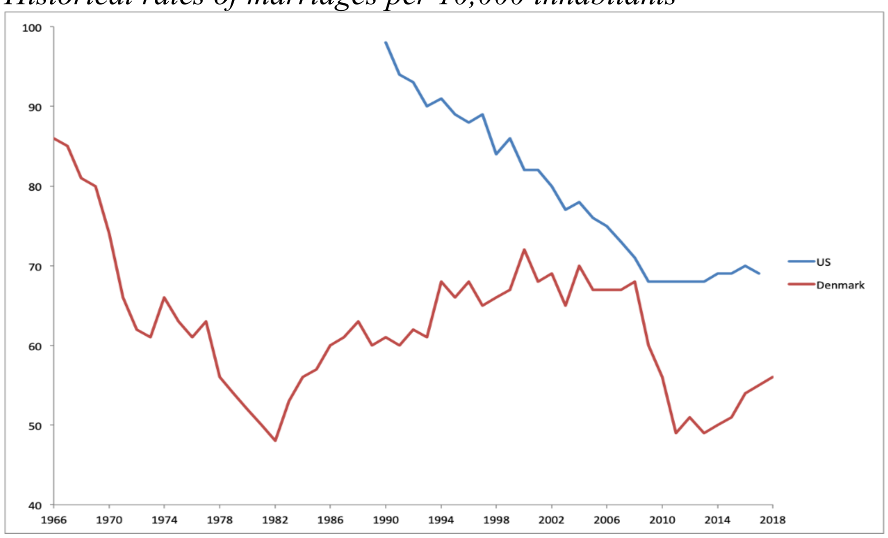
All groups with individuals 30 age and over have experienced similar dramatic increases in incomes while the younger cohorts have seen their income levels grow at a much slower rate over the last three decades. The similarities between the countries are notable, too. Despite the increasing higher education enrollment, income growth for recent graduates – represented by the 15-25 group in the US and 20-24 group in Denmark – is generally low, which lessens the payoff of pursuing a degree added to the opportunity cost of missed income during the years of study.

To reinforce this point, the employment rate for a young adult (ages 25-34) with an upper secondary degree fell from 85.1 percent in 2000 to 78.4 percent in 2017. In the US, the drop was from 80.1 percent to 73.4 percent over the same time period. Similarly, the decline for tertiary degree holders was 5.5 percent and 2.8 percent from 2000-2017 in Denmark and the US, respectively (OECD, 2018b). This downside is magnified in the US due to the rise in frequency and magnitude of student loan debt. The subdued income growth for young adults is a clear contributing factor to the inability of these individuals to build the requisite savings needed to afford a home, especially when rental costs and house prices are outpacing this growth.

## 5.1.4 SOCIO-DEMOGRAPHIC TRENDS

A portion of the shifts in the housing market and homeownership are a result of socio-demographic changes in recent decades. Young adults' evolving lifestyle choices are directly reflected in their living location and housing type. As discussed in the literature review, marriage and family formation are directly linked to the pursuit of homeownership. In both Denmark and the US, the marriage rates have been on the decline for several decades.

Figure 13
*Historical rates of marriages per 10,000 inhabitants*



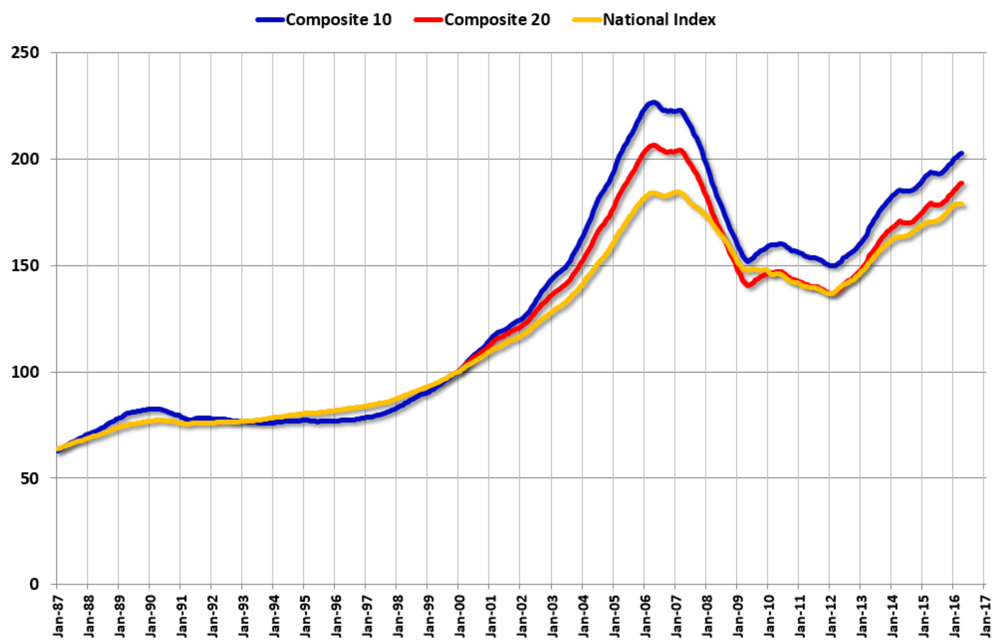

*Source:* Data for Denmark from Statistics Denmark (2019), data for the US from US Census Bureau (2019)

The long-term historical trends are pronounced in both countries and give insight into the downward trend in young adult homeownership rates. As marriage rates are on the decline, individuals may be more inclined to live alone rather than become homeowners. The decision to marry and to pursue homeownership are deeply entangled with the previously discussed economic and labor market contexts. Looking at the graph, there are precipitous drop-offs in marriages – especially in Denmark – during times of economic distress, such as the early-1980s and following the financial crisis. Both countries are now trending upward as the economy is recovering, although it seems unlikely that they will revert to their historic highs.

For those that are getting married, the average age of first marriage has been getting higher in the two countries. In Denmark, the average ages of first marriage were 26 and 22.9 for men and women in 1960, respectively, and they have slowly climbed up to 34.9 and 32.5 (Statistics Denmark, 2019). Although a bit lower in the US, the average ages for men and women were 22.8 and 20.3, respectively, in 1960 and they are up to 29.8 and 27.8 in 2018 (US Census Bureau, 2019). Again, these trends are largely a product of cultural shifts but are also a product of increased rates of higher education enrollment by both genders and a greater percentage of women in the workforce. The delay in marriage can also partly explain the postponement of homeowning. Since a smaller share of young adults is marrying at a later age or not at all, fewer will have the need or desire to purchase a home. That is not to say that those single young adults will not purchase homes, but marriage is often a driver of homeownership and dual-income households can also more easily afford to own.

Another significant trend in the housing market has been the migration patterns of young adults. Young adults (ages 25-34) in the US are moving between states and within states more often today than they were in 2005 (US Census Bureau, 2019). More specifically, in the US, the share of the population that lives in a metropolitan area increased from 70 percent in 1960 to 82.1 percent in 2017. Additionally, the percentage of dwellings that are vacant is nearly twice as high in rural areas as it is in urban areas (OECD, 2017a). In Denmark, the share went from 73.69 percent to 87.8 percent over the same time-span. A large percentage of the growth of large cities can be attributed to the influx of young adults who are attracted by the labor market opportunities and the lifestyle. It is more common to rent in metropolitan areas than any other level of urbanization; in the US, 60 percent of low-income metropolitan inhabitants are renters (Larrimore & Schuetz, 2017). However, using the Case-Shiller Home Prices Indices to compare the US national home price index with the 10 and 20 major metropolitan cities composite indices show that home prices vary distinctly by area.

Figure 14
*Case-Shiller Home Price Indices in the US, national and metropolitan composite, indexed to 2000 (nominal)*




*Source:* Reprinted from Sanford, B. (2016). *Case Shiller Home Price Index*. Charter Trust Company. Retrieved from https://www.chartertrust.com/case-shiller-home-price-index-2/. Copyright 2019 by Charter Trust Company.

As these measures are all indices, an argument cannot be made about the comparative affordability of homes in these three areas; however, the growth rates can be compared. Despite the similarity between the prices in the different areas in the late-1980s, there is greater divergency in recent years. In a way, separate housing markets are beginning to form in rural and urban areas. This is a product of migration patterns and the lack of housing supply, especially owner-occupied units, in metropolitan cities.

The increased demand for rental properties inevitably drives up prices, which partially explains the increasing share of rent burdened households across all income and age groups, as previously discussed. There are also relevant trends in the living arrangements of young adults. In the US, the share of Millennials living with their parents is almost 50 percent higher than any previous generation (Fry, 2017). Although an unstable job market and economic downturns certainly play a role, despite an improving economy, the percentage of youths (ages 15-29) living with their parents in the US increased from 62.8 in 2007 to 66.6 in 2014 (OECD, 2016b).

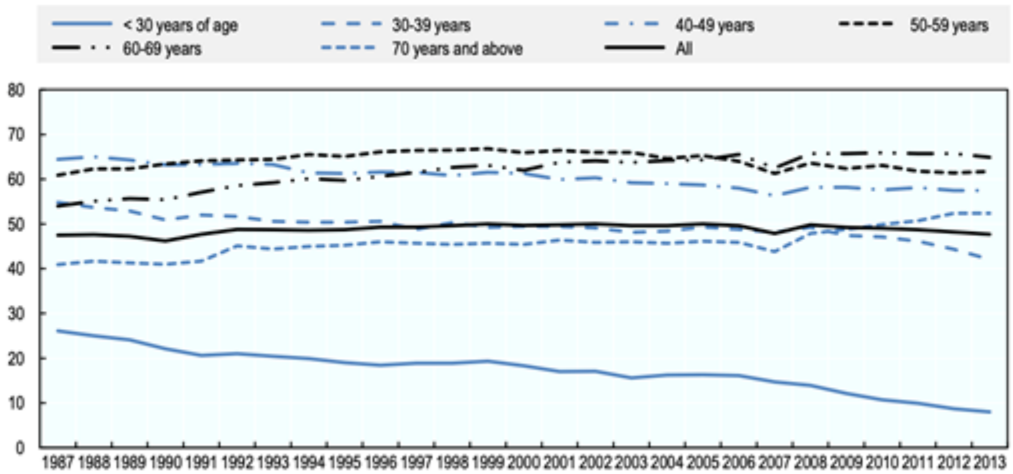
In Denmark, the percentage of youths living with their parents was only 34.3 in 2014 – although the number has gone up in the past decade – and the large difference between the two countries is attributed to the disparity in youths living alone, which is 28.8 percent and 3.9 percent in Denmark and the US, respectively (OECD, 2016b). As young adults are living with their parents for longer and oftentimes returning after completing their educations, which is the origin for the term 'boomerang generation,' demonstrates a new non-linear living trajectory that replaces the classical housing ladder path.

### 5.1.5 HOUSING MARKET OUTCOMES

The four highlighted drivers of the demand for housing are interconnected and evolving. Although the general trends exist in both countries, they differ on a macro-level due to the welfare and housing regimes, culture, mortgage systems, and historical paths. As a consequence of these trends and as a product of the supply of housing, which will be discussed in greater detail in the following section, homeownership has fallen for young adults.

Figure 15

*Percentage of owner-occupied households in Denmark, by age group*

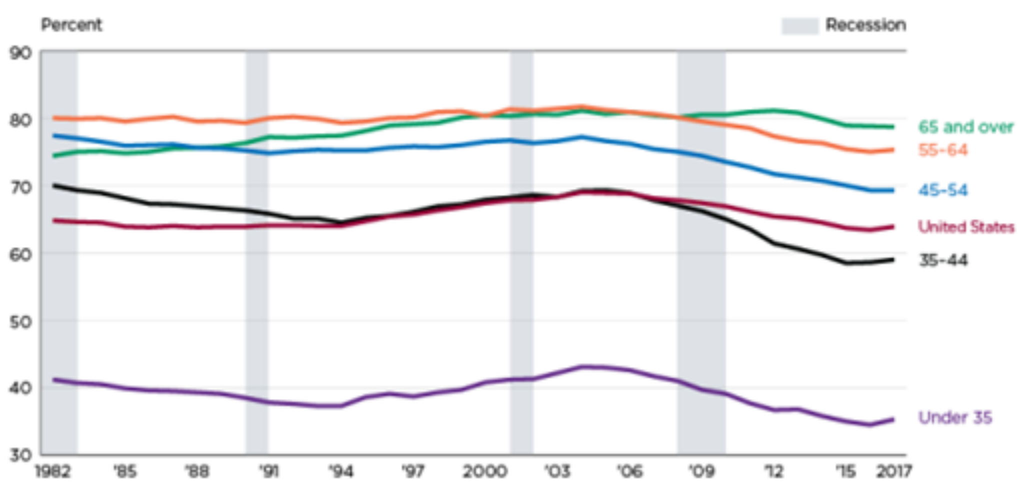



*Source:* Reprinted from Whitehead J. & Williams P. (2017). *Changes in the regulation and control of mortgage markets and access to owner-occupation among younger households*. OECD. Copyright 2017 by OECD.

Although the homeownership rate has remained steady at around 50 percent over the selected time frame, the under-30 group has dramatically declined. In the argument that young adults are simply postponing the choice to purchase homes in favor of further education and later marriages, the next two age groups (30-39 and 40-49) have also declined over this time period, albeit at a less substantial rate. In the US, the trends are similar.

Figure 16

*Homeownership rates in the US, by age group*



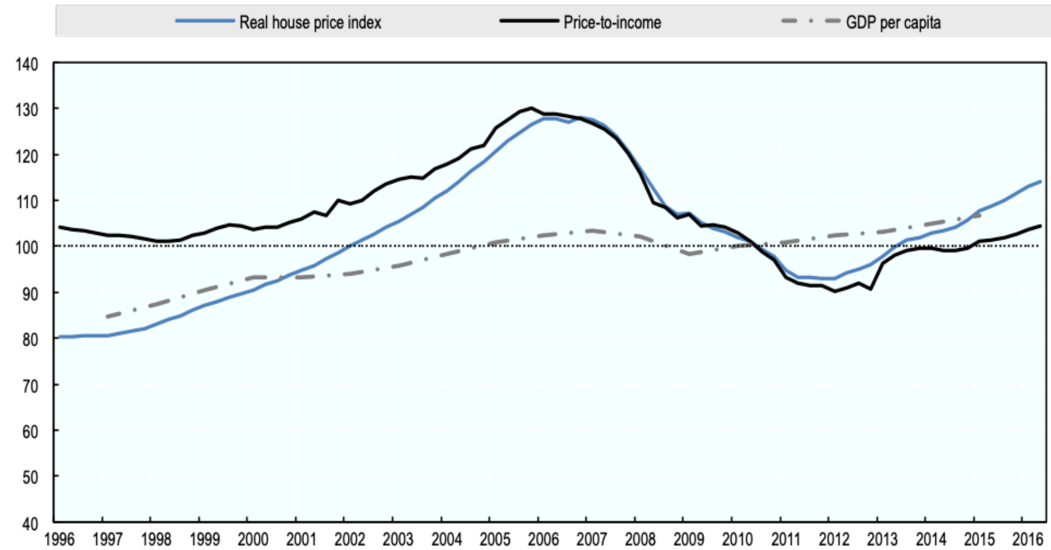
*Source*: Reprinted from Mislinski, J. (2018). *U.S. household incomes: A 51-year perspective. Advisor Perspectives*. Retrieved from https://www.advisorperspectives.com/dshort/updates/2018/10/16/u-s-household-incomes-a-51-year-perspective. Copyright 2019 by Advisor Perspectives, Inc.

Although the fall in young adult homeownership in the US is not as substantial as the one in Denmark yet the same downward trend exists. Again, there does not seem to be strong evidence that young adults are simply postponing homeownership, unless it is by decades rather than years, as the next age group (35-44) has experienced a ten percent drop over the selected time period. Instead, it is more likely that a larger share of young adults is being priced out of the homeownership market.

Supporting this argument is the fact that the median age of first-time homebuyers in the US stayed nearly constant from 2001 to 2018, going from 31 to 32 (Lautz, 2011). Similarly, the share of homes bought by first-time buyers decreased from a high of 40 percent in 2003-2005 to 32 percent in 2015. Interestingly, the median age of all buyers increased by nearly a decade because the age of repeat buyers increased from 41 to 55 over the same time frame (National Association of Realtors, 2018). Although data were not available for first-time homebuyers in Denmark, the youngest groups in the age-segmented data presented previously were a similar proxy. The inability of many young adults to become homeowners is due, in large part, to the affordability of homes and other living options.

Figure 17

*Historical development of house prices in the US*




*Notes*.

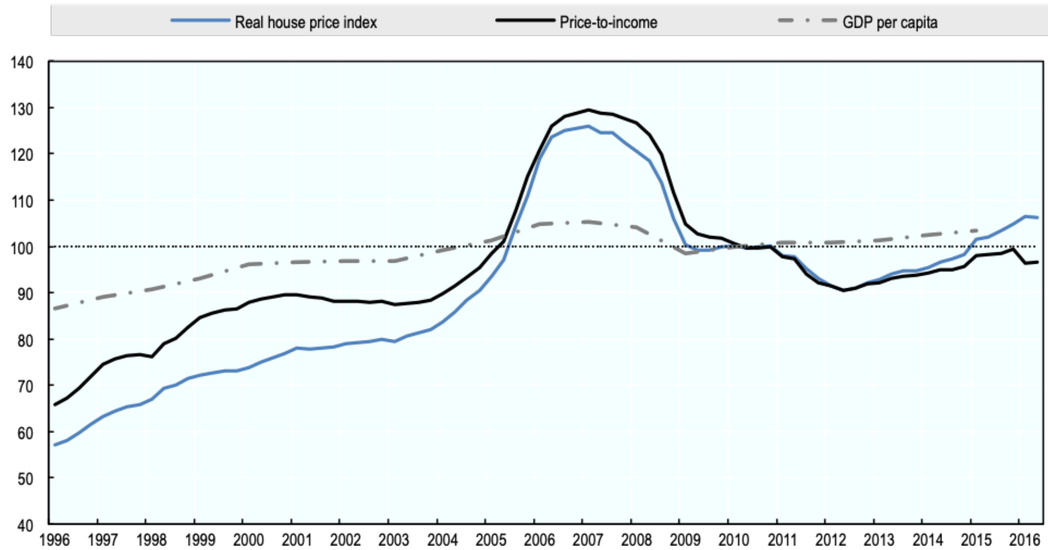
1. Real house prices, price-to-income ratio, and GDP per capita indexed to 2010.
2. Price-to-income ratio is the nominal house price divided by the nominal disposable income per person.

*Source:* Reprinted from Lembcke, A. C., Veneri, P., & Wolf, C. (2016). *What can we learn from regional housing cost and housing expenditure? A comparison of trends in OECD countries*. OECD. Copyright 2016 by OECD.

The price-to-income ratio is considered a measure of the affordability of homes. The formation of the housing bubble in the early-2000s is quite clear in the graph; consumer sentiment was that housing prices would continue their rapid appreciation. Even before this time, the high price-to-income ratio demonstrates that homes price growth was outpacing income growth, making homeownership more unaffordable. In 2010, only 43.3 percent of households could afford a median-priced home with a standard 30-year mortgage, down from 51.5 percent in 1996 (US Census Bureau, 2019). When thinking back to the age-segmented income data, income appreciation was weakest for young adults, indicating that they had the biggest difficulty trying to afford the rising price of homeownership. In Denmark, the overall trend is similar.

Figure 18

*Historical development of house prices in Denmark*



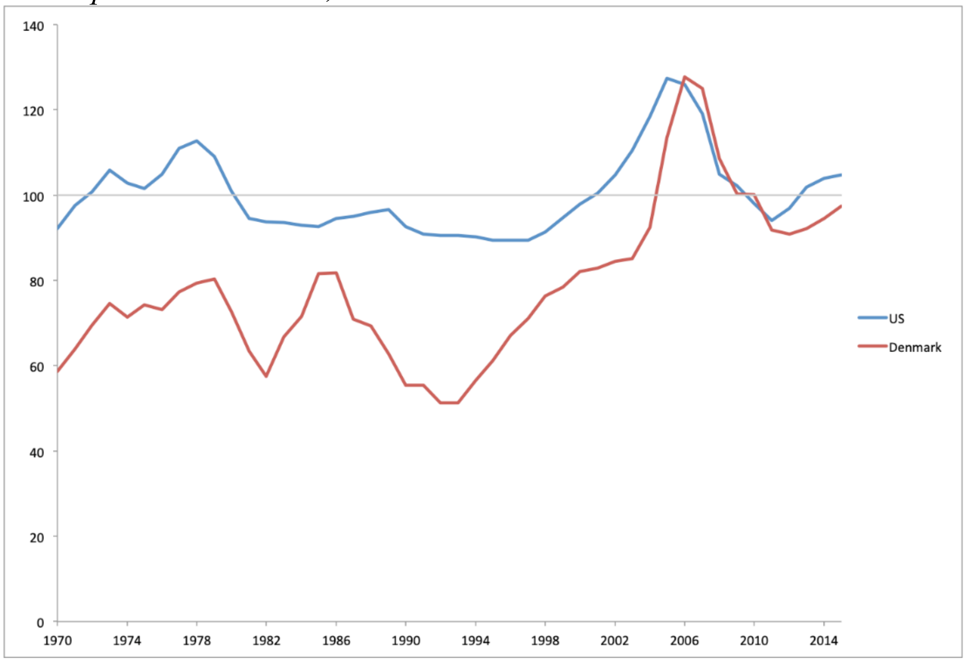

*Notes*.
1. Real house prices, price-to-income ratio, and GDP per capita are indexed to 2010.
2. Price-to-income ratio is the nominal house price divided by the nominal disposable income per person.

*Source:* Reprinted from Lembcke, A. C., Veneri, P., & Wolf, C. (2016). *What can we learn from regional housing cost and housing expenditure? A comparison of trends in OECD countries*. OECD. Copyright 2016 by OECD.

The housing bubble in Denmark seemed to form at a much quicker rate than in the US but reached the same peak in the mid-2000s prior to the collapse. In recent years, house prices are trending upward again, which could be a potential red flag for another housing bubble or a sign of the new norm. As mentioned, increasing the supply of housing could be one form of stifling home price appreciation; however, factors like the growth of metropolitan areas, low interest rates, government policies in favor of homeownership, and the economies' recoveries continue to fuel demand for housing. While housing prices are important to consider, the private rental market should be evaluated in tandem. The price-to-rent ratio provides a view on the affordability of homes, can be gauged as an individual's incentive to pursue homeownership or to rent, and considered a measure of the profitability of homeownership.

Figure 19

*House price-to-rent ratio, indexed to 2010*




*Note*. Both house and rent prices are nominal

*Source:* Data from OECD (2018b)

By this metric, the rental sector in Denmark has historically been undervalued in comparison to the cost of homeownership relative to the 2010 indexed level. This could be a product of favorable protections for renters and the steep increase in home prices in recent decades. In the US, the price changes in the two living options have been relatively equal over time. With lessening state support for social housing options, rising rent levels, and stricter lending practices, the housing market is becoming less affordable and homeownership less attainable. This is especially the case for low-income households because of their increased rent burdens, stagnated income levels, and limited credit options.

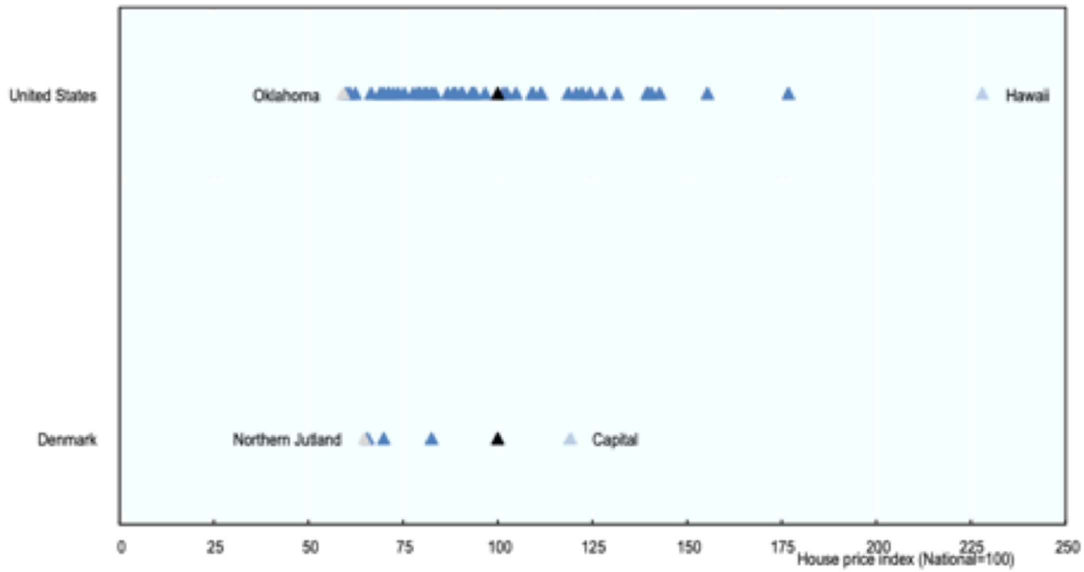
With these burdensome external challenges, the need for financial support from families to attain homeownership is becoming increasingly important; in the US, 17.1 percent of Millennials received parental help to pay for the down payment of their house in 2018, a rate that is higher than previous years. Following regional patterns, Denmark has one of the highest rates of financial transfers from parents to their children in Europe (Albertini et al., 2007). This is especially important because affording a down payment is the most-oft cited large obstacle to buying a home by Millennials (Salviati & Warnock, 2018). Thus, for young adults from low-income families with limited assets, the ability to become homeowners is more difficult, especially in the US, as shown by the following figure.

Figure 20
*Homeownership rates in Denmark and the US, by income distribution, 2014*


*Source:* Adapted from OECD. (2016a). *Housing by tenure*. OECD. Copyright 2016 by OECD.

Although the analysis to this point has predominately been done on a national level, it is important to state that housing crises exist on regional and local levels. This is largely due to migration patterns toward metropolitan areas, general desirableness of specific cities, local government policies, building regulations, localized job markets, and countless other factors. Nevertheless, these local situations are greatly influenced by government policies, economic stability, the mortgage market, and other national-level contexts.

Figure 21
*Regional house price variation*



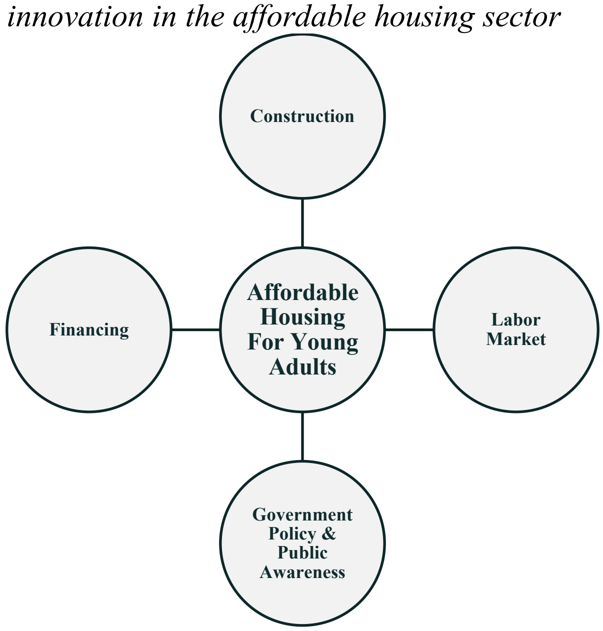

*Note*. Data for Denmark are from 2011; data for the US are from 2000.
*Source:* Adapted from Lembcke, A. C., Veneri, P., & Wolf, C. (2016). *What can we learn from regional housing cost and housing expenditure? A comparison of trends in OECD countries*. OECD. Copyright 2016 by OECD.

The discrepancy in regional house prices is great and the separation is magnified when zooming in on individual cities. As well, the above data consider only house prices; there are also clear differences in rent costs, vacancies, and demand. Although national-level policies and plans are relevant, regional and local contexts are vital to examine in order to understand the current situations and challenges facing each unique area. To most effectively understand the potential solutions to the localized housing crises, as well as to gain the housing supply-side perspective, it is necessary to analyze the actors currently operating in that space.

## 5.2 The Supply of Housing – Regional and Local Perspectives

The first step in understanding the data at hand is to detect the correlated concepts, we need to be highly enlightened in preparing how to use our findings to generate theories and help us validate or challenge our creation of constructs, which can be said to be crucial in presenting arguments with merit (Gioia et al., 2012). In this section, we will tackle our findings in four parts, we have compared the Danish and US markets for most of our research; however, for the purpose of this paper, we will follow the criteria: construction, labor market, local government policy & public awareness, and financial, in relation to homeownership rates for young adults. The findings for the US and Danish markets are combined in this section, as most of the insights pertain to both, but differences are also highlighted. James Casper, founder of the construction technology company Baya Build, notably likens the current housing development sector to a game of 'hot potato' where is risk is being passed around. Thus, no company in the process wants to handle the risks and those eventually gets passed on to the consumer (J. Casper, personal communication, April 8, 2019). The consumer, in this case, is young adults.

Figure 22
*Barriers restricting innovation in the affordable housing sector*




### 5.2.1 CONSTRUCTION

When it comes to homeownership and its affordability, the construction process and its effects on the market are paramount. The foundation of affordable housing is making sure housing development is timely and cheap. Construction companies are indeed trying to cut costs, often with the use of new technologies. For example, multiple interviewees mention using modular construction. Steven Bohlman from Jackson Main Architecture in Seattle, Washington explains the concept:

> And so what modular construction is, is decreasing the amount of time that it takes to construct a project in the field, which results in savings on the developer side in terms of how long they're holding that lending through construction, not necessarily the cost per square foot of the structure itself. But the financing of that bridge loan or that construction loan is a shorter time period because most of the construction is done offsite. Assembly happens onsite in a much quicker time period (S. Bohlman, personal communication, April 10, 2019).

James distinguishes the primary market (i.e., initial building development) from the secondary market (i.e., repairs, renovations, and resales) and argues that they are dis-aligned. More specifically, the primary market does not "care what the actual quality of the structure is" because it is simply wants to sell at the highest price (J. Casper, personal communication, April 8, 2019). As a result, newer buildings are increasingly requiring renovation work or being rebuilt completely, which is a burden on the secondary market. Peder Kjøgx, a partner at CPH Facilitation, echoes this point and cites the fact that most historic buildings in Denmark are still intact while many newer ones are in disrepair because they were not developed with sustainability in mind. To address the quality crisis, the US government passed laws to help consumers from the burdens of the secondary market. This was done by allowing homebuyers to sue developers when the quality of the building caused problems and, as a result, developers are now shying away from building owner-occupied affordable housing units.

Steven contends that most of the company's clients are scared to build owner-occupied condos because of the ownership rights to sue the developers in the event of defects. Whereas in rental properties, there is only one owner of the building. Steven summarizes, "So even though [the developers] could be sued for, you know, seven years after [building], that problem is still only one claim. With a condo building, if you've got 100 units, that can be multiplied by 100" (S. Bohlman, personal communication, April 10, 2019). Being sued by one person rather than 100 different people is a better risk for the developers. Note that housing developers will provide services to the highest bidder, as they are driven by profit, and the highest bidder typically does not include young adults who want to enter the housing market. Steven also indicates that the trend is slowly changing and, due to the oversaturation of the rental market, more developers are slowly willing to take on the risks that come with developing owner-occupied properties, but not at a high rate. Further progress depends on local governments amending these liability laws, which Steven is working to support (S. Bohlman, personal communication, April 10, 2019).

The increasing costs of construction have led companies and consumers in the US to re-imagine living and housing spaces and to look to places like Denmark that are bringing back old living styles and updating them. Yet, today residential units in Denmark must have wet rooms (e.g., bathrooms and kitchens) due to customer demand and these are the costliest components to build in an apartment (M. Lund Andersen, personal communication, April 25-26, 2019). Architectural firms, like Jackson Main, are designing different living arrangements to reduce build costs by implementing co-living areas and sharing spaces between multiple one-to-two-bedroom apartments (J. Casper, personal communication, April 8, 2019). The goal is to build denser building units, shifting the baseline metric for evaluation from cost-per-square-foot to cost-per-door. Although this does not lower the cost of the construction, it gives firms the potential to earn more and to accommodate more dwellers. As well, increasing housing supply will provide more affordable living options, and potentially ownership opportunities, to young adults.

Rising land and labor costs make developing high-end apartment complexes the most logical and financially attractive decision. To increase the supply of more affordable living options, companies must find new ways to build denser housing properties. The need to re-develop the way people live encourages co-creation between the developer and the intended customer. In some regions, people are asked how they want their spaces to look and create with the developer. For example, Frederik Busck, co-founder and director of CPH Village in Denmark, highlights the role of innovation in creating living arrangements for a target market (F. Busck, personal communication, May 1, 2019). CPH Village creates cost-effective, mass-produced spaces with students as its target market. Since young people are moving to metropolitan areas at high rates, there is a high demand for affordable rental units, which can be a challenge for students. As shown in the previous section, the higher demand and lack of housing units and available land – due to de-industrialization and lack of jobs in surrounding areas – have made it more difficult for young adults with limited funds to enter the housing market (M. Lund Andersen, personal communication, April 25-26, 2019). In order for companies to successfully provide a pathway to ownership for young adults, they must be seen as a target market.

When it comes to homeownership, the interviewees in both countries disagree that young adults are underserved in the market. Marc Lund Andersen, a senior economist at The Knowledge Centre for Housing Economics in Denmark, states that he does not believe that it is everybody's "human right to own a home" (M. Lund Andersen, personal communication, April 25-26, 2019). Brynn Mortensen from Salt Lake Chamber (SLChamber) in Utah notes that her organization is more concerned with the availability of rental property, either to be built or existing properties that need renovation; however, she does believe that everyone should have the ability to own a home. SLChamber claims that the state should focus on providing affordable options to help people move up the housing ladder (B. Mortensen, personal communication, April 12, 2019). Steven, who has personal experiences in both countries, compares the cultures and posits that in Denmark “the whole idea of going to eventually go and buy my own house is not necessarily as central to the idea of independence as it is in the United States” (S. Bohlman, personal communication, April 10, 2019).

Other organizations are purchasing properties and self-financing or stabilizing the rent so that their tenants (e.g., students, young adults, and young families) can afford to live there. Ronald Hall, a board member on the Palo Alto Housing Corporation in California, indicates that approximately ten percent of the tenants living in one of the city’s affordable housing units transition into homeownership or out of the program, whether due to savings or higher income levels (R. Hall, personal communication, April 15, 2019). Offering affordable housing, even at the rental level, can help young adults become homeowners by providing them with a way to save for a down payment. Thus, more organizations should incorporate the affordable rental market into their business model as a stepping stone toward homeownership.

There are inherent obstacles in the construction sector and the innovation in this field has been low. Marc correctly argues that although everybody talks about building in a cost-effective fashion, in reality, it is very difficult to achieve (M. Lund Andersen, personal communication, April 25-26, 2019). Relatedly, Steven contends that innovation in the affordable housing sector is restricted by the fact that the potential financial reward is “not nearly the money that is available in market driven [sectors]” (S. Bohlman, personal communication, April 10, 2019). Nevertheless, it is important to develop innovative ways to provide cheaper housing units without sacrificing quality.

## 5.2.2 LABOR MARKET

The labor market is the next point of examination; young adults are pursuing higher education more frequently than previous generations, which leaves a gap in the skilled labor market. In the US, 82 percent of construction companies have a labor shortage and 44 percent in Denmark (Human Capital Analytics Group, 2016; Lifschutz, 2018). The shortage of labor has increased construction costs and build times. Brynn reinforces this point by citing the statistics that for every five individuals retiring from the trade, only one is trained to take their place (B. Mortensen, personal communication, April 12, 2019). The shortage of labor is cited multiple times in the interviews as a primary driver of increased construction and housing costs. This problem is being tackled in different ways:

1. Provide training to more people in the construction field. SLChamber is a state-commissioned coalition that has proposed a deal with various high schools and technology colleges to get more people into construction. This is done by introducing an app with various incentives and offering information to potential recruits to help them seamlessly enter the market, if a career in construction interests them.
2. Find innovative ways of cutting down construction time and the need for physical labor. James directs us to the findings of the McKinsey innovation index that show that the construction and real estate industries are the least innovative sectors in the world. This historic lack of innovation is largely a product of strict industry regulations and practices, as well as liability concerns.
   a. Steven takes the approach of implementing modular construction to help decrease build time, as most of the construction is done offsite and the assembly is done onsite (S. Bohlman, personal communication, April 10, 2019). Ronald states that even though

modular construction saves time, it has not been shown to decrease construction costs (R. Hall, personal communication, April 15, 2019).

b. Steven also points out that ‘panelization’ is also another form of innovation construction, which also follows the method of building the frames of the structure offsite and then assembling onsite (S. Bohlman, personal communication, April 10, 2019). This innovation still focuses on saving time and not directly decreasing construction costs.

Innovation and training are getting more attention in terms of bringing down labor costs with the use of technology; however, these solutions still do not address the current problems facing young adults that are pursuing homeownership. James argues that although technology is a potential solution to these challenges, “you need some other components, too, to buy in” (J. Casper, personal communication, April 8, 2019). Essentially, the potential impact of innovation is hamstrung by the surrounding contexts, such as building codes, government policies, and legal issues. Moreover, these regulations are updated almost annually, which inherently limits the ability of planners, builders, and architects to make medium- and long-term plans. Even if construction time is reduced, because of certain union laws, builders are still paying a premium when it comes to labor costs. In order to address the labor market, it is important for companies to look into tapping into the young adult market and innovate ways to get them involved on a pathway to affordable owner-occupied homes.

### 5.2.3 LOCAL GOVERNMENT POLICIES AND PUBLIC AWARENESS

These two topics are highly intertwined – the local government acts on the neighborhood’s demands on how it wants the communities and spaces to look. Ronald indicates that a major challenge to greater affordable housing development is the resistance of the community (R. Hall, personal communication, April 15, 2019). Policies cannot change if the local residents are not educated as to why more development is needed within their neighborhood (B. Mortensen, personal communication, April 12, 2019). Another connection between local government policy and public awareness is highlighted by Ronald; funding for affordable housing comes primarily from public money, but public entities are not allowed to spend public money without the consent or vote of residents (R. Hall, personal communication, April 15, 2019). Further, organizations have found that residents usually do not vote in favor of using public funds to erect affordable housing, which is because of the lack of awareness that this crisis will affect their children and grandchildren (B. Mortensen, personal communication, April 12, 2019).

In Denmark, Peder states that 25 percent of new housing units in the greater Copenhagen area need to be affordable, as decided by the city's or county's political parliament (P. Kjøgx, personal communication, April 26, 2019). Yet, some forms of resistance still exist on the regional level. The US market is facing similar resistance; Brynn indicates that Utah has a moderate-income housing plan that the municipalities had to abide by. Despite this plan, there were no penalties if local jurisdictions did not follow the rules, but the state is now more strictly enforcing it (B. Mortensen, personal communication, April 12, 2019). Peder also states that as private companies move in and develop less-desirable neighborhoods with new amenities, property prices rise 20-40 percent, which makes it unaffordable for many people. He believes that the government needs to step in and change the profit game. In essence, he argues for Denmark to regulate profit-driven strategies centered on buying properties to drive up rents without improving the building or adding to the community (P. Kjøgx, personal communication, April 26, 2019). This business strategy is apparent in private firms that seek to maximize short-term profits without regard for the well-being of the infrastructure or community. Additionally, this strategy is damaging to current tenants due to increases housing prices and limits homeownership opportunities for young adults.

In the US, the rules and regulations of different governments and neighborhoods can deter private companies from coming in and building affordable housing. Steven sheds light on a fund that supports affordable housing development in Seattle that all building firms must pay into. But this fund amounts to far less than the government needs to construct affordable housing for its contingents (S. Bohlman, personal communication, April 10, 2019). Consequently, the government is tasked with constructing affordable housing with restricted funds while it closes the business off to private entities that could build quicker due to their greater source of funds.

The Danish government supports private companies in funding affordable housing; however, the results are limited because affordable housing projects are aimed at target markets. CPH Village builds affordable rental units that are restricted to students, which does not directly address the young adult homeownership problem. Regardless, this was achieved by collaborating with local governments to develop in new areas and working to change planning laws. Now, Frederik maintains that CPH Village's main challenge is working with local communities and municipal councils to promote the opportunity (F. Busck, personal communication, May 1, 2019).

SLChamber is a state coalition in Utah formed by companies that were worried that their employees could not live where they worked. To address issues like these, governments and companies are starting to commission studies to further examine the affordable housing crisis. SLChamber's study examines historic housing prices, population growth rates, and the gap of affordable and publicly available housing units (B. Mortensen, personal communication, April 12, 2019). With these findings, the coalition is able to educate the public in the local regions and avoid NIMBYism (Not In My Back Yard). NIMBYism manifests in people who want to keep their land and neighborhood intact, with little to no understanding of the widespread effects of the housing crisis. Relatedly, Ronald states, "Everybody agrees on the need for housing and affordable housing, but they don't seem to support, or at least in a lot of jurisdictions, don't support individual projects" (R. Hall, personal communication, April 15, 2019).

According to Ronald, having to garner public awareness process at each local zone is time-consuming, which is why it can take years to change legislation (R. Hall, personal communication, April 15, 2019). For municipalities to see growth in the affordable housing sector, it would be beneficial for them to work with private entities. These companies have the requisite funding to support affordable housing and aid in the development of projects that reflect the needs of the community. If communities do follow this strategy, it still does not directly address the lack of homeownership opportunities for young adults. Indirectly, however, there is an argument that by increasing the supply of housing, affordability measures improve. Some jurisdictions require affordable housing for a targeted population, and it seems that young adult homeownership is not a priority relative to other disadvantaged groups (e.g., the homeless, handicapped, and veterans). Of course, the needs of each community vary and Marc mentions that in Denmark, each municipality has historically had the power to build as much social housing as it wanted for its community. (M. Lund Andersen, personal communication, April 25-26, 2019).

### 5.2.4 FINANCING

When asked what they thought was a big challenge to creating more affordable housing, an overwhelming majority of the interviewees argued that it was financing. Financing touches multiple sections of the current housing pipeline: development, profit and risks, and consumer lending.

At the development stage, financing plays a big role in what type of housing is developed. In the private sector, most of the companies interviewed were profit-driven but were still trying to do some type of social good in the affordable housing sector. This distinction is somewhat of a false binary; both Baya Build and Jackson Main provide social benefit in the form of more affordable housing supply but are private profit-driven firms. Affordable housing development is principally financed with the help of financial incentives such as tax credits, bonds, grants and impact fees, and these financial sources can affect what type of projects are developed. Some jurisdictions require very specific building amenities that help blend in with the community; however, they "typically aren't financed by normal financing process" (R. Hall, personal communication, April 15, 2019).

In order to reduce the amount of money needed, implementing new innovations, such as modular construction, help cut the payback period on a loan (S. Bohlman, personal communication, April 10, 2019). Ronald states that 60 percent of construction is now pre-manufactured units. Contractors save on the interest paid on financing developments, which he estimates to be around 20-25 percent, but the startup costs of modular construction are paid upfront to avoid financing for longer periods of time (R. Hall, personal communication, April 15, 2019). Despite the growing prevalence of modular construction, this does not solve the core problem of high construction costs.

Typically, what firms find profitable to build is out of the affordable housing range, which in the US is defined as housing costs that amount to less than 30 percent of income. Due to high construction costs, to be profitable, it is almost necessary to build luxury units (S. Bohlman, personal communication, April 10, 2019). For example, in the Bay Area of California, over 80 percent of the new homes constructed in the last four years were affordable only to residents in the top income-quartile (Hansen, 2019). When asked to estimate what percentage of new residential developments are affordable (i.e., affordable to median income households), Marc responds, "when it comes to newly build residential places I would guess that the number is pretty close to zero" and that even new social housing developments are expensive live in because the price is based on cost (M. Lund Andersen, personal communication, April 25-26, 2019).

On to the consumer side of financing, following the GFC, banks changed their lending policies and introduced stricter loan requirements. Ronald suggests that the US examines and adjusts its criteria when it comes to homeownership to help people to enter the housing market. On the other hand, Denmark has an interesting approach to consumer financing. Before the financial crisis, banks allowed individuals to purchase houses without the required five percent down payment, which is now not possible. According to Marc, this change was to prevent another housing bubble from forming. He later argues that Denmark has one of the best mortgage systems in the world, which leaves little room for innovations within its current system (M. Lund Andersen, personal communication, April 25-26, 2019). Conversely, there appear to be a growing number of innovative companies targeting the alternative home finance sector in the US. Even though Denmark does not tax capital gains for homeowners, there is still a problem for young adults – it is less risky to save for a down payment than it is to invest in stocks and bonds, which are heavily taxed. Yet, young adults are often not able to take advantage of this tax benefit due to various factors like the lack of savings, relatively low incomes, and rising housing costs.

# 6. DISCUSSION

## 6.1 DEMAND-SIDE DISCUSSION

One general finding is that the national-level perspective is the most common in literature when, in reality, housing crises are more evident on regional and local levels. This is clear from the regional variation in living prices and affordability measures presented in the analysis. Further, migration patterns to metropolitan areas, along with the related increase in rental and home prices, the scope of studies should be narrowed to these afflicted areas. These areas are especially important in the context of young adult homeownership because of the large share of young people currently living in and moving to them, as well as the dominance of the rental market over ownership in these markets. National policies and welfare regimes greatly dictate regional situations, as explained in the analysis, but the point of study should be shifted toward the root of these housing crises. The supply-side section of the analysis covers the local perspective, which was largely absent in the literature, apart from some city-level case studies (see, for example, Andersen & Winther, 2010; Hochstenbach & Boterman, 2015).

Focusing further on this perspective, the recent housing bubble and the related financial crash complicate findings based on recent data. Studies (see, for example, Conley & Gifford, 2006; McKee, 2012) that show an inverse relationship between social expenditure and young adult homeownership should be revisited as public spending levels remain high in Denmark and the US following the financial crash, while young adult homeownership levels continue to decline. These contradictions could very much be a product of the abnormal circumstances of recent years; however, it may support Castles (1998) findings that show a weakening relationship between welfare expenditures and homeownership rates. The main findings that point in this direction are the population shifts to metropolitan areas, in which the rental sector dominates, declines in young adult income levels, and the rise in home and rental prices. These related factors make young adults less able and less likely to become homeowners.

As public expenditures are now beginning to normalize, it is possible that the inverse relationship cited will hold true over the long-run. Importantly, the theory stands true across welfare regimes – ownership levels in Denmark and the US are proof positive of this – and the national homeownership levels are fairly consistent over recent decades for all households. Yet, the decline for young adults is likely to persist, which complicates earlier findings.

There is a natural impetus to suggest suggesting policies and practices when conducting a two-country comparative analysis. Despite having different welfare regimes, cultures, mortgage practices, and homeownership rates as much as 20 percent apart, the data presented show similar macro-trends and changes in young adult homeownership levels. Despite the slight tightening of borrowing criteria in Denmark in recent years, it remains one of the most accessible yet robust; however, to suggest that the US should implement a similar model is not realistic. The Danish model remains resilient because of the generous pensions and social services offered; whereas in the US, a restructuring of the state would be needed to achieve a similar mortgage system. While homeownership continues to be the preferred living type of young adults in the US – for cultural and investment reasons – the state is naturally reticent to blindly extend credit to this group following the recent subprime mortgage meltdown. More feasible solutions could be small-scale mortgage reforms such as expanded first-time or young adult buyer assistance in the form of tax concessions or amended loan requirements. Other learning opportunities come primarily from the local and regional level, which will be discussed in the supply-side discussion.

To comment on the ongoing debate in the literature whether young adults are postponing or abandoning homeownership, the analysis in this paper predominantly supports the latter perspective. Not only had homeownership levels massively declined for young adults (under the age of 35) in both countries since the 1980s, but the same trend existed for adults in their 40s and 50s. The delay in marriage and family formation, along with an increase in higher education enrollment, partially substantiate the postponement argument. As well, the growing populations in metropolitan areas, in which the rental sector is the most common housing type, could signal a societal shift away from owning toward renting, unless there is a future surge in the construction of owner-occupied units in these city areas. Regardless, stagnating real income levels for young adults in comparison to rising home prices and growing rent burdens indicate that homeownership is simply becoming unattainable for many. The ability to accrue the necessary savings for a down payment is further complicated by low interest rates on savings, stricter LTV and other lending requirements, and higher home prices that require larger deposits.

These challenges are magnified for low-income earners and individuals from non-homeowning families with limited assets because they do inherit a house and are less likely to receive financial support when pursuing homeownership. For this reason, the intergenerational perspective is increasingly common in literature and more nuanced analysis of young adult homeownership segmented by income and demographic characteristics should be explored in future studies. Moreover, when formulating real-world solutions to these problems, these disadvantaged groups should be at the forefront of the discussion about young adult homeownership.

From the data, it can be argued that each of the four points of the framework – construction, finance, labor market and, government policies and public awareness – need to be considered simultaneously for affordable housing companies to develop the innovations necessary to satisfy the current gap in housing units. Baumol (1990) argues that the acts of the entrepreneur (i.e., construction firms) and its form of innovation at specific moments is reliant on the rules of the game and how their reward is structured, and its behavior change according to the rule changes. This is an indication that the structure of the affordable is complex and non-receptive to productive innovations because of rent-seeking behavior. James argues, "that the entire ingredients, those components that make up this this environment, are actually flawed" before arguing that in order to address the housing problems, one must "change the fundamentals of the makeup of all the stakeholders" (J. Casper, personal communication, April 8, 2019). Thus, it can be argued that the downfall of the system is its dis-alignment. This dis-alignment is noted as the disconnect between the demand and the supply sides; companies do not see profit potential in the affordable housing sector and the people searching for housing do not find dwellings that reflect their needs in terms of pricing and ownership opportunities.

Companies are concerned that young adults are not able to afford housing and thus are not incorporated into their business models. On the other side, young adults are entering a homeownership market that is not tailored to them. Steven fully acknowledges that his company does not have visibility into the end-user; he is simply tasked with meeting the demands of his clients, in this case the developers (S. Bohlman, personal communication, April 10, 2019). The inability to interact directly with the end-users fosters a profit-driven behavior that does not aid young adults in the housing market. Construction firms are producing a supply that is more focused on profit, developing based on perceived living trends and hoping that the end-user will benefit.

To address the housing supply deficit, the government needs to propose incentives for private companies to build affordable housing for young adults. This can be achieved by reducing build restrictions or partnering with construction companies to develop community-designed properties. The community can use public money to fund the development of affordable owner-occupied housing for young adults. As the allocation of public money requires local approval, it is important to help the community understand the need for affordable housing and how it affects the economy and overall well-being.

Local municipalities should identify target socio-demographic groups that will vote in favor of affordable housing development. Brynn from SLChamber found the target market for the coalition's education campaign to be parents between the ages of 34-64 (B. Mortensen, personal communication, April 12, 2019). Those campaigns evoked a call-to-action for the community to stop it from becoming as dire as some of the nation's other cities with major housing crises, like New York and San Francisco. The uniqueness of SLChamber is that the coalition focuses on how to effectively involve multiple actors in the affordable housing ecosystem, fostering communication between the supply and demand sides. This type of organization will help change the rules of the game and help innovate outside of the existing structural norms.

Lastly, construction costs are largely a function of land and labor costs. On the labor side, the lack of skilled and unskilled workers in both countries has driven up costs and lengthened build times. Ironically, the increase in higher education enrollments rates has diverted labor away from the construction industry. As well, graduates are increasing their earnings potential, and thus their ability to become homeowners, but the related labor shortage drives up construction costs and home prices. Governments need to address the labor shortage by funding educational programs to funnel people toward the construction sector. Further, the targeted group could be low-income families that are currently having the most trouble becoming homeowners. Local communities should promote the skilled labor market or grant funds to private construction firms that are developing innovations to offset the lack of labor. Some of the companies interviewed see the labor shortage as an impetus to improve innovation in the otherwise stagnant industry.

Although the supply and demand drivers have been discussed separately, there is a need for co-creation between the two sides. Despite the developments by the firms interviewed, innovation within the affordable housing sector and the construction industry is still lacking. It is difficult to compare innovations on a national level because planning, developing, and building vary on a local level, as do the end-users' needs. Countries need to look at the demands of young adults and their limitations to entering the affordable housing market in order to provide a supply that meets their needs. Some companies are working on stabilizing the rental market, making it more affordable and a better pathway to homeownership; however, the effectiveness of this strategy is still unclear.

## 6.3. OVERALL DISCUSSION

The framework derived from the reviewed literature separates drivers based on whether they impact the supply or demand side of the housing market. Despite the understanding that most have an effect on both sides of the equation, many of the evaluated studies identify and test one variable’s effect on young adult homeownership. An interesting finding relating to education enrollment rates demonstrates that the results can be more nuanced. More specifically, pursuing higher education has been studied as a way to avoid poor job markets, boost earnings potential, and increase the likelihood of homeownership. An equally relevant development on the supply side is the associated shortage of construction workers and blue-collar workers, which drives up construction and home prices. Thus, to properly understand the effects of education trends, as well as other factors, it is necessary to apply this two-pronged analysis.

Another perspective that often lacks the two-sided analysis relates to studies on the financial sector. While the mortgage market and consumer lending are thoroughly analyzed in the literature and this paper, a discourse of equal weight is missing on the impacts of financing on the construction sector. Throughout the interview process, financing was often mentioned as a major challenge to the development of affordable housing. In 2014, the Danish Financial Services Authority (FSA) introduced regulations to limit the growth in lending in four segments: private owner-occupiers, private residential properties, farms, and other commercials (Whitehead & Williams, 2017). Just as the state monitors lending practices to different sectors, this report considers financing challenges for both consumers and developers.

Of the approximately 20 OECD countries analyzed, the US has the highest estimate of the long-run price-elasticity of new housing supply with a score (based on residential investments from the early-1980s to the mid-2000s) that is 50 percent greater than Denmark's, which ranks third (Caldera Sánchez & Johansson, 2013). The positive supply responsiveness of the two countries indicates that building more housing units would be an effective way to maintain or lower housing costs and meet the growing demand. However, housing supply responsiveness is more rigid in densely populated cities in both Denmark and the US (Green, Malpezzi & Mayo, 2005). This is due to local land-use regulations, planning challenges, and physical limitations (Andrews et al., 2011; Gyourko, 2009). Steven gives Seattle as an example: "affordable housing for younger is a big problem in metropolitan areas" because most new apartments are "premium units" meant to recoup the high cost of construction (S. Bohlman, personal communication, April 10, 2019). For this reason, the two countries face significant challenges to growing their housing supply in metropolitan areas to meet the growing demand.

The aforementioned five regulatory policies by the FSA and the interview excerpts included in the analysis demonstrate that Denmark is making a concerted effort to curb another housing bubble from forming. In the US, similar mortgage regulations were enacted but surging rental rates and the lack of alternative living options funnels many toward homebuying as an investment and a form of self-security. Therefore, a fundamental transformation, rather than incremental innovations, of the US homebuying sector – that alters both the demand and supply of housing – is needed to alleviate the young adult homeownership crises.

Beyond covering both demand and supply drivers of the young adult homeownership crises, this research also combines national-level trends with a localized perspective. This approach is largely absent in the reviewed literature, potentially due to data limitations, lack of comparability, and effort required to dive into local context via interviews or otherwise. Regardless, countless metrics and trends provided indicate that housing problems and homeownership challenges are manifested on city and regional levels. National government policies, mortgage markets, and economic health play an important role, too, but the continued growth of metropolitan areas on the demand side combined with land constraints on the supply side indicate that affordability indicators will only worsen.

The choice to compare the housing challenges in two countries lends itself well to the goal of identifying the root of the problem and generating potential solutions. Earlier multi-country studies typically attempted to tease out the variables responsible for declining homeownership levels or were used to make generalizations about regions. While effective for those purposes, this broad form of analysis ignores the local-level indicators at the heart of the housing crisis. Conversely, city-level case studies pinpoint the gritty details and potential fixes but are often not of comparative nature. By placing Denmark and the US, along with their local problems and solutions, side-by-side, there is an opportunity for learning from the other.

As argued by Drew (2015), the recent housing bubble and market crash complicate short-term studies on the housing market and thus long-term evaluations are superior when diagnosing causes of the young adult homeownership crises and exploring potential solutions. Although the formation of the bubble is often discussed as an aberration – a product of consumer irrationality, lax lending laws, and general economic prosperity – recent indicators suggest that it could be closer to the new normal. The continued surge of real house prices and price-income ratio, especially in the US, suggest that home affordability will be out of reach for many young adults.

Following up, two distinct housing markets appear to be forming, one in metropolitan areas and the other in rural areas. As shown by the Case-Shiller Home Price Indices, at the onset of the housing bubble formation in the early-2000s, home prices in metropolitan areas, especially the ten largest cities, rapidly outpaced the national average. Even following the rapid decline in home prices after the market crash, prices in metropolitan areas have recovered more quickly than the national average. Due to physical land space limitations in metropolitan areas, it is difficult to imagine the supply of housing being expanded enough to meet the growing demand. Brynn mentions Utah's shortage of 54,000 housing units and James cites seven million as the national deficit of affordable housing units (B. Mortensen, personal communication, April 12, 2019; J. Casper, personal communication, April 8, 2019).

Although Shiller (2000) argues that residents and businesses will dessert an area if prices become exceedingly high, continued migration to metropolitan areas and the related trend in housing costs runs counter to this point. Moreover, future population predictions indicate that mega-cities will continue to grow and contain an even greater share of the population. Steven gives a personal example that shows that Seattle is continuing to expand and develop in surrounding lands (S. Bohlman, personal communication, April 10, 2019). This trend demonstrates that the demand for housing is not expected to slow.

To counteract this surge in demand, Shiller (2000) argues that the government will implement building and land-use policies to allow for greater development on the existing land and in new land. There are obvious physical limitations and geographic barriers to expanding cities, but most large cities are increasing their sprawl. Instead of physically expanding, cities are also making the most of their existing space, as discussed in the interviews. Frederik cites his company's work in building student-living facilities outside of city centers to argue that the supply of land no longer is the problem; instead, the challenge is "to get landowners to rent land out to temporary student housing and to get municipal councils and administrations to promote the opportunity" (F. Busck, personal communications, May 1, 2019). This example shows although there are natural limitations to city expansion, multi-group collaborations can have positive outcomes.

By shifting the metrics that govern new developments to consider the number of units per building, cities can bolster the available housing stock, potentially at a lower cost per unit. Many of the interviewees indicated that cities and residents have been slow to adopt the necessary policy changes to develop denser and more affordable buildings; however, the fact that it has entered the discussion suggests that positive actions are to be expected in the near future. These policies and actions must be taken to satisfy the growing housing demand, maintain housing prices, and provide a more viable path to homeownership for young adults.

The missing component in this balancing act, which was tackled in this paper but had generally been absent in earlier literature, is the role of innovation. Shiller (2000) contends that advancements in innovation in the housing sector are key to constructing buildings at a faster and cheaper rate, which will drive down home prices. Although various innovative building techniques were discussed, their full potential is limited by the complicated nature of the industry and the surrounding political, economic, and social ecosystems in which they exist. Further, the real impact of these innovations at their current stage is disputed and the technologies have some scalability issues due to discrepancies in regional standards and regulations. Nonetheless, the historical dearth of innovation in the construction sector, the rising costs due to labor shortages, and the sheer size of the industry make it ripe for disruption. Although there were various local and regional efforts and solutions to address their own housing challenges, few simultaneously addressed the supply and demand drivers with the assistance of innovative technologies or processes, and none did so in relation to young adult homeownership. For that reason, the final section of this paper will discuss recommendations that address these separate issues.

# 7. CONCLUSION

In the US and Denmark, young adults are increasingly unable to become homeowners, which has long-term inequality and social ramifications. The roots of these problems are numerous, complicated, and interconnected. This paper attempts to identify the drivers of the young adult homeownership crises in the two countries and to understand the potential role of innovation in addressing these challenges. As well, it aims to separate the drivers into sides based on whether they affect the supply of or demand for housing and analyze whether these challenges are becoming more severe for young adults in recent decades in both countries. In order to evaluate the current and potential innovations in the housing market that target this problem, the role of innovation is analyzed, as well as the structural limitations and challenges that exist in the current landscape limiting the development and implementation of innovation.

When considering the demand for housing from the perspective of a young adult, both countries show evidence of decreasing access to homeownership compared to past decades, which supports earlier findings in the cited literature. Long-term data segmented into four categories – state influence, economic and financial indicators, labor market factors, and socio-demographic trends – show similar patterns for both countries, with the main differences being greater mortgage accessibility in Denmark and the adverse effect of mounting student loans on savings and credit scores in the US. The financial crash exacerbated existing problems due to stricter lending regulations and an unstable job market; however, even data from the current recovery period indicate that young adults will continue to encounter difficulties in the housing market due to their migration patterns, stagnating income levels for the youngest cohorts, and rising housing costs.

On the supply side, the role of innovation is important for young adults to enter the housing market. Incentivizing the formation of new technology and its mass implantation will help societies adapt and effectively create affordable housing for young adults to purchase. In order for innovation to set in, these key challenges need to be addressed: the government and the public need to realize the importance of affordable housing and what it means for the future; firms must strive to reduce the cost of construction and labor; and lastly, address how to secure financing for new projects by public funding schemes or communities partnering with private entities to provide housing supply.

# 8. IMPLICATIONS

## 8.1 IMPLICATIONS FOR FUTURE STUDIES

The reviewed literature highlights the complexity and dissenting opinions of the key drivers of housing demand but simultaneously demonstrates the siloed perspectives that many authors take when evaluating the topic. The analysis provided demonstrates that a more holistic approach is needed when discussing the housing market due to the inherent interconnectedness of the issues. More concretely, the state's policies are largely shaped by and shape the economy, financing options, and education opportunities, which in turn drives the housing market. That argument is well understood and that is not to say that the studied literature does not discuss other factors or account for multiple variables, far from it; however, it should garner greater emphasis in studies.

The role of a country's welfare and housing regimes on the housing market and homeownership levels was one of the most common perspectives found in earlier literature. One study by Groves et al. (2004) sought to create a decommodification index for housing based on the influential work of Esping-Anderson (1990) that grouped welfare regimes based on a similar index for the three principal services of the state – health, pensions, and unemployment. This housing index was based solely on the share of social housing stock in relation to all housing. Admittedly oversimplified by the author, social housing is only one state-manipulated option in the housing market. As discussed in the analysis, a more robust index could other housing influencers, such as subsidies for renters, rent control levels, mortgage regulation, tax incentives for homeownership. Based on the presented data, Denmark appears to provide a wider range of accessible living options to its citizens than the US, but an index would serve as comparable proof. The work in this report serves as a basis for future studies in this field.

The absence of recent and relevant studies on the role of innovation in the housing sector is noteworthy. On top of that, there is no literature that considers this perspective in relation to the young adult homeownership crisis. The work in this paper illustrates that there is a need for innovation in the construction industry, which is beginning to be met by some architectural and building firms. Their existing and potential impacts are yet to be determined; however, it is topic that merits further research. While no companies in the alternative home financing sector responded to our interview requests, there growing prevalence indicates that innovation could also have a large impact on the demand for housing. This specific topic is especially relevant in the US, which has stricter lending practices now that typically exclude large portions of low-income and debt-burdened households.

This paper also argues for the need to concurrently consider supply and demand drivers of the housing market. There is an abundance of literature that focuses on only one side of the equation. The effects of economic downturns and government policies are typically analyzed with respect to their impacts on an individual's ability to become a homeowner. While these arguments are valid and worthy of study, equal work must be dedicated to understanding the related impacts on the supply of housing. By considering both sides simultaneously, one can make a more accurate assessment of the impacts on the housing market and homeownership levels.

## 8.2 IMPLICATIONS FOR THE REAL WORLD

The research in this paper does not articulate actual blueprints for construction firms to follow in order to innovate. Nevertheless, there are key findings that should be explored when tackling innovation within the construction sector to provide more affordable units for young adults to enter the housing market.

1. Construction companies should incorporate young adults into their business model to create actual value by addressing their specific needs. None of the companies interviewed currently target this demographic. Co-creation is a way for firms to provide a supply in real-time that meets the end-user's demands (i.e., current living trends, adaptive spaces). This strategy will help bridge the existing disconnect between the property developers and the end-users.
2. It is imperative for communities to work together with private firms, create incentives to spark innovations, and address the needs of their inhabitants. The supply side must view innovation as a profitable move and the demand side should be able to comfortably borrow or afford the going rate of housing prices. Another objective to explore is for municipalities to educate their constituents on the importance of providing affordable housing and voting to use public funds to develop innovations within the industry.
3. Develop a standardized innovation metrics for small firms to share and collaborate. The metrics should include what the industry deems to be successful innovation. Examples include the time to develop, cost saved per unit, flexibility and adaptability to market needs, and replicability in different areas. Encourage innovation that re-shapes the way we think about construction rather than innovate within the existing structure.
4. The skilled labor shortage may never be filled, and it is one of the leading reasons why construction is expensive. Companies are already implementing innovative technologies (e.g., modular and panelized construction) to compensate for the shortage of labor, as discussed in the interviews.

   a. Alternatively, provide job training programs related to the construction sector to fill the labor gap. Policies to encourage greater job participation rates in these sectors boost the supply of affordable housing and help the participating workers boost their earnings potential. These policies could specifically target low-income households, as they are the ones increasingly being left behind in the homeownership market. Although this type of program would be most effective on the national level, it could still have an impact on a smaller scale.

5. Re-imagine the finance sector on the supply and demand sides.
   a. On the supply side, national governments should prioritize the need for affordable housing. This should be done by providing a baseline of funding required by each municipality dedicate to the cause and enforce penalties if standards are not met.
   b. On the demand side, banks should implement new lending criteria specifically for young adults. This is already seen in Denmark, but the US should follow suit and expand its benefits to first-time homebuyers. Many young adults today have difficulties securing standard mortgages due to student loans, low credit scores, unstable jobs, and rising property prices. Financial institutions could lower credit criteria, reduce the down payment required, and explore more lease-to-own practices to mitigate risks.

Due to various limitations stated previously in this paper, it is difficult to provide concrete solutions. However, it is important for further research to use this as a stepping stone in analyzing how each of the individual factors listed above must be addressed in order for young adults to enter the housing market and to enable innovation within the construction industry.

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# APPENDICES

## APPENDIX A

Interview with James Casper from Baya Build on April 8, 2019

*Note.* The audio recording and transcription of the interview are available on the USB drive.

**Nick**
Well, I think we could start just by giving you a quick rundown of our background and what we're doing. And then we'd be happy to hear kind of what you are doing as well. Our research paper is our master's thesis, we're both students at Copenhagen Business School, even though we are both Americans. Edith is from New York, and I'm from California. So, we know a little bit about housing affordability and the housing crisis ourselves personally. And at the moment, we're researching kind of the drivers of the housing market, and what is happening in these two countries, and why it's becoming more difficult for young people to become homeowners, homeowners specifically. And then the next step, I think, is what we're looking at as why we're talking to you today is to see what has been done in these two markets from the private sector. Because we feel like the government perhaps is not doing enough to satisfy the needs of young people specifically, but also just in terms of affordable and social housing. So you're one of the companies that we've targeted, we've seen is working in this environment, and we're just kind of curious to see what you're doing and what your perception of the problems are, and what can be done to kind of solve that the housing crisis if you can solve that all.

**James**
Great thank you for that. Will this be published internally?

**Nick**
Exactly. This will be internal.

**James**
Can you send me a copy of what you're publishing?

**Nick**
Yeah, we can send you a final copy.

**James**
So you brought up a claim right now, saying that the governments are not doing enough, but I do think that it's good to give some background color to that. And that is that the housing crisis, in my opinion, is not a function or problem started by government. It's, it's actually a function that the, the core contributors are contributing factors to the development cycle, from the developer all the way to the end user, which is, you know, a student, a buyer, or mentor, that, that the entire ingredients, those components that make up this this environment, are actually flawed and that's the action, that's the reason why we, it's, it becomes harder and harder problem unless you change the fundamentals of the makeup of all the stakeholders. Okay, so what that means is, from a developer, sometimes people call sponsors all the way down to the end user, you have a

developer that hires and architects that hires an engineer, or group of engineers, group of architects, and, and then that engineer or developer will hire a general contractor, GC and the GC will hire an average of 22 to subcontract. And then 22, though the average in the US is 35. It can be less, maybe 17, 18, won't be much less and because and that's just, and that's those are just the internal components, you have external, like lawyers, and mortgage companies. And so the financing groups, and then you'll have title, companies, and then you'll have the actual government, or the municipalities that are granted permits. And if you look at all of those contributors, they are completely dis-aligned. Because of that this alignment, and no matter what anyone does, you'll only make a marginal difference in changing the end results of affordability. and really what we are saying about affordability, and if you see the end result, and I'm just putting this in a very binary, simplistic way, right. But the reality of the cause of why things are so expensive, is because when you're paying $1 or, or in your case, a kroner for a product, you'll be getting 30 cents per value. And that's what that really means is that, a lot of these companies started off in the private sector, and I'm happy that you guys are looking into the sector. Whatever they do, they can stave off a few cents. But they're not going to be able to change. A) they will not be able to change drastically and B) they won't be able to reconfigure the makeup of the of the contributors, and therefore the results. Does that make sense? Yeah. So the problem is that the structure is flawed this alignment, is really the ultimate core of the problem.

**Nick**
So he's saying, in terms of just creating affordable housing, that, obviously that the environment is so complicated, so entangled, that it's not just a simple matter of the obviously, the government was saying, we want to create more affordable housing, it's all these other actors that have their hands in the pot, and the external economic, in fact, factors and things like that, that for a company that you're part of like yourself, the effect that they can only have this only so small.

**James**
Correct! We're reinventing the, the environment the makeup of all those stake holders. And that's the only way we feel and by reinventing the environment, last designing a different methodology. And controlling a different flow method is multiple things that you know, you have to start at four. And then we have to go all the way designed to deployment. And if you kind of think about designing your implementation or your process and you deal with the core problem, the delivery if it is a smart delivery then you're able to, you know, make a radical change.

**Nick**
So what would you say, are some of the biggest challenges that you're facing when you're trying to achieve this goal?

**James**
It very difficult to change the laws of physics, what we are doing is near or close to changing it a little bit. And I don't mean in a scientific, like what I'm saying, like, we have to deal with governments, mortgage companies, and we have to deal with, you know, a lot of different stuff and say this and what you're doing is really counterproductive. And, and hurtful. The problem is that the end user, people want to get the most effective, all the people along the pain, they're all eating correctly in their mismanaging transferring risks, which is really what you're doing, from

one to another, kind of like a hot potato. Everyone doesn't have one point. That's the risk. You're, you're passing it on, because you don't want to get. And, and it's more than that, because what happens is that the developers end up having to design a product, that really, not only is it expensive, is not sustainable. It's not environmentally friendly. It's not even, it's not even consumer, meaning it's, it's consumer shiny, know, they make is shining, and pretty as they can to get to the sold as quickly as possible with the least amount of risk. And, and, and really, they're not, they don't care about the value of what's in the structure. Yeah, it's a vicious circle. So I'll give an example. So you know, a common factor, okay, makes more money in the secondary market, and then the primary market. And that means that, let's say you have that: Mercedes, for argument's sake, or, okay, they, they sell the car, and they make money on the sale, that's the primary market. But the second element, which is the life of that car, after the fact, going to garages, and getting paint jobs, and, and, and changing tires, and brakes, and all invested in oil changes, that secondary market, the car companies make more money, the secondary market and the brand. Okay, so, so to a certain degree, and I'm just giving you this, going to commenting factors, and just for the sake, so it's in their best interest, to sell cars, and be as competitive to the other comment factories. And so it's best price possible, because they're getting a second bite at the apple for them and lessen their interest to keep a car that will never give them any yield in the secondary market. Meaning if they could create a car, then instead of it, you know, giving them $100,000 in the secondary markets, we're going to lose that market, right, and that revenue net income. So, it's very similar in the housing market. They don't really care about what happens, they don't have so much with the secondary market, he wants to develop himself. He's got the secondary market. But here's a good that everyone, the secondary market, that stuff is going to age and going to have to build and rebuild. Right. But the primary market, they don't really care, they're going to do this themselves, and sold from highest price they can get. And they don't really care what the actual quality of the structure is. Hey, let's find out why.

**Edith**
So I wanted to know if Baya Build was driven more by profit or socially motivated in helping more young adults into the housing market.

**James**
Yeah, so we don't hold ourselves as a social impact driven company, but the reality is, we can factor. I mean, we don't brand ourselves an impact company maybe we should.

**Edith**
Is there a reasoning behind that?

**James**
I don't know, you focus so much on the branding. As much as we have them a solution. For us, we have an incredible talent to, to try to change an industry to good and to redefine it. And so our focus is really on the algorithms and all the processes that we put behind our innovation. And that is a massive challenge. It has really been our focus, it's been an oversight.

**Nick**

And one of the core focuses of our paper, maybe this partly self-serving is on young adults entering homeownership. But it's also because it's increasingly difficult for us to become homeowners because of stagnating wages, student debts, stricter lending criteria and things like that. When you're looking at the end user will be residing in your properties. Are you thinking about a certain demographic in terms of age or gender? A lot of it in the US has means tests are a lot of it is homelessness. They're very specific niche groups, is that something you think about as well?

**James**
Absolutely, and our focus is affordable space. I am actually speaking in a conference in 10 days in Nashville is probably the largest conference in us that deals with affordable housing model, practical perspective, but also from a legislative perspective. So there'll be a lot of, you know, influences influencers and government organizations party to this conference. So affordable housing is super important for us. I think it'd be important for you to know what we do. Do you have any background on Baya Build and what we do?

**Edith**
Yes, I do. I know you guys are trying more on a structural level to make sure everything is made in an efficient way using a lot of technology and cutting down on the construction costs. Yeah, just speaking about what you do. Yeah, so I am aware of what you guys do. You said you were going to a conference; would you mind letting us know what the name of the conference?

**James**
It is the UV. That's the acronyms and we can give you the full name of it. Just bear with us. It's called the affordable and work housing council. Affordable and workforce housing counselor in Nashville on April 18.

**Edith**
Okay, so we have been talking about affordable housing. And I just wanted to know, what does that mean to your company? What is the goal in that kind of range?

**James**
So remember, we spoke about the fact that when you're spending $1, you're getting only 35th of value. So what we're trying to do is spend the dollar and get 90¢ plus about. And if you're able to do that in only spending a dollar balance, we can reduce the price. And the same time designing products environmentally friendly sustainable, and its user friendly. Or when I say friendly, you know, you didn't use the word aligns day, so friendly means of align. So environmental, environmentally sustainability, wise, and user aligned. And by the way, just to say, it's actually all the stakeholders involved a lot more. So including the architects and designers, the entire process. And all the stakeholders in between.

**Nick**
Then we're curious to since a lot of what we're writing about has to do with homeownership, specifically, because we feel like that's the best way for people to become long-term economically viable and self-sufficient, especially in the US where there's a lack of public safety net. Do you see affordable housing, typically it's rented in that sense, as a stepping stone towards

homeownership, or do you just see it as an alternative? Or how would you place it in the housing market?

**James**
Definitely you know study's that people who own homes are financially more viable than people who don't. You know, drastically. So, I definitely, you know, we think about, if we want to, if we want to help communities and individuals from every demographic, we need to give them a product that they can own. And they can live in successfully and will bring out the in them and will serve them to the best means and possible ways. And I think it's important to realize that, in most cases, besides the ability to own a home, once you own the home, you have to manage that home, as many homeowners know homeowners know that house or an apartment, yeah, can become a money pit. And that's going back to that secondary market. And we discussed, and if we, and if you can't design it in a in a way where you're super mindful to the ongoing burdens, and therefore try to eliminate the cost for the secondary market, then you really created the product and the solution that, you know, helps people, you know, long term. So it's not only, it's not only the getting it to the finish line, design it and build it in a way where the secondary market is supper efficient and therefore and not costly.

**Nick**
And how much of this, I know that the local building regulations and state all have standards that they need to be met, and they want affordable housing, but they also want mixed use, and they want office space and all these different factors that kind of playing into what you can actually build an end. And in terms of going back to homeownership, what do you think? Like how much can you actually control what the end usage will be of your spaces?

**James**
How much can we control? Can we design something that doesn't conform to the local requirements? No, we won't get it, you know, we won't get license to build it. We can design it into you know, it can look like any other type of department or structure or house. It's not confined. We have unlimited versatility in the design of you near infinite. we don't do is we don't do best spoke offline, you don't do upsizing best spoke which means that we will design certain standard sizes, so that we can eliminate extra costs.

**Edith**
You spoke a lot about doing thing efficiently. Does technology play a huge role, in helping this process, inviting people into homeownership?

**James**
Absolutely. Technology is definitely the key instruments to be able to achieve this.

**Edith**
And does that speak towards your building process, the process of like mapping things out?

**James**
So yeah one of the largest companies in the world is Amazon. for the most people don't realize that Amazon isn't actually a technology company, because they just think is it's an online e

commerce stock. But really, e-commerce and is one function of what they do, what they've done was, what they said, “We want to be a logistics technology company want to be a technology company that controls logistics.” And they control the process, all the way from the manufacturers, to designers, the packaging, to shipping, to financing, all the way to advertisements, and deploying the product to a client, so an end user. And so that's what they've done. They use technology to do that. We're doing something very, very similar. But we just think about is like, and don't quote me on this, but think about like an Amazon of construction. We're technology company that uses two core disciplines and that is design and logistics, the fulfillment and the solution. What's the solution? Affordable housing efficient, efficiently provided structures.

**Edith**
You spoke a little bit about you, speaking to Danish companies on affordable housing and stuff like that. And I just wanted to know, like, does your company look to international like players to see what they're doing and kind of inspires. It's like the US market or what you would bring to the US market?

**James**
So I definitely think that what I've created over the last five years, has a lot to do with my experience working in Japan, and Denmark and London, Singapore, St. Petersburg. This is all kind of helped me. Learn about innovations and disciplines from multiple cultures, and be able to kind of pick and choose, you know, what works and efficient and kind of bring that into a basket of displays algorithms, that we're now using the US. This is absolutely not a US method.

**Nick**
We're just curious about that because we are doing a comparison us and in Denmark, you have that unique perspective. I just wanted to kind of focus in on that a little bit more. How would you compare the general housing market to the two countries and the challenges and the goals?

**James**
So it's really not fair for me to comment on the Danish housing market, I worked for two technology companies. And I was one of them, I was like one of them that was the fourth largest client of Saxo Bank. So and a good friend of Lars and Kim, with the founders and CEOs. But so I spent a lot of time, and another one called CFH, and so I can tell you from an architecture perspective because that's what I know the most and I know there are places in Europe where you have a lot of grey skies and damp climate you see new structures being built with very large, window spans and trying to bring in as much natural light into a structure I feel like that has been Europeans developed, actually, much more than they have in the US from that perspective. Additionally, they are very conscious about environmental, about the environment, about the use of energy, conservation of energy. And I feel that in terms of that perspective, Europe is way further. Having said that, in the US, you have the largest market concentrated market in the world. And there is innovation. But if you look at you know, there's an innovation indexed by McKinsey, and you may want to quote this, but if you look at as if you don't as it I can dig it up and send it to you, but they look at, they make an index, I think every two or three years, where they show different, different verticals, different industries, that and how innovative they are. And the construction real estate industry is the least innovative industry in the world. And so

when you add, can technology change this, this the only way is be used to innovation and technology.

**Nick**
That was interesting to know, because we have been looking at these two housing markets in our general kind of research question is what has been done to help or what has been done to change the current situation. And it seems like in the US, it's much more private market driven. I think the government generally just encourages homeownership as a way of self-protection. And like you said, there's very little innovation or change. So if there is anything that's going to happen, it's going to be from firms like yourself, whereas in Denmark, what from what we've found, it's more, there's more alternatives to living day different types of homeownership living arrangements, the social housing markets much larger and state backed. So just generally those two we found can be the vast difference.

**James**
You look at a socialistic environment, Denmark, for various reasons, Denmark is always nominated as one of the happiest places in the world because there is very good social community and structure. I feel that in, you know, countries, like the US more of a capitalistic market, right? Capitalism drives the structure and therefore this, you know, it may be anti-capitalism, but I'm just saying it may also influence how the results are in the industry and the stakeholders

**Nick**
So I'm kind of curious that since you are working in this more capitalistic environment, the US word is innovation drives things. Do you think, I don't want to say, "Could your company exist?? But would you have the same impact? Or what do you think like, you would be like, if you were in Denmark, working kind of in the same sector?

**James**
I don't know the political landscape in Denmark But I would think that would be more receptive. And, potentially help by, by the government, you know, more one more day in this area.

**Nick**
Perfect. Those were the main questions that we had, or I had at least. Edith, what about you?

**James**
Awesome. Great. I am excited that you guys are umm. I don't know if you know, the US they quoted deficit of 7.2 million units for the affordable housing. Have you seen it? Yeah. So that's a big number. And the other big at the other big factor you should understand here is that most people that are living in the affordable housing space, they're living in what's called C class properties. You know how now, okay, so probably the US defined with A class, B class & C class are the two major components of both of those classes, or age of building. Okay, the age when it was built, and amenities. So, building that as a pool, five years ago, is going to be in A class building. Whereas a building that was built in the 1970s, or houses with very little amenities that talking to do, that would be a C or C minus a property. So, what's happening is and this is, what the big fear, to people like myself, and others, that are very attuned to this, is

that they're living in very old structures that are aging. And, the cost to rehab that, is very, very expensive, the big problem in the US is the cost of labor. And the cost of labor is driven by the fact that there's a very big shortage of labor, so every year will be more and more people from the trade. And therefore, it's becoming more and more expensive to find labor and everything is more expensive.

**Nick**
That's definitely another perspective that we haven't really dived too much into, like the construction aspect, and just how costly it is to build in the US because of all the reasons that you mentioned. So I guess technology, like you're saying, is the way to kind of solve that and looks like it's being done in a lot of ways right now.

**James**
It is a way, it is a major factor, it is a key way; but you need some other components, too, to buy in.

**Nick**
No, I think that's everything that I was hoping to get today. So we definitely appreciate your time. Awesome. Thank you.

# APPENDIX B

Interview with Steven Bohlman from Jackson Main Architecture on April 10, 2019

*Note.* The audio recording and transcription of the interview are available on the USB drive.

**Steven**
That kind of falls along those lines. In our traditional kind of multi-family work, we're seeing a lot more smaller and smaller units to be requested by our clients and developers. In the Seattle market, we have a specific name for those they're called the EDU's are small efficiency dwelling unit. And they are very small one-bedroom studio apartment that provides a little bit more access to those units because they can rent at a much lower rate. However, when you start talking about home ownership, that is kind of a whole different classes of units, that that would be essentially kind of many items that are sold individually. We're starting to see that happen a little bit more here. But honestly, part of the big problem that we have with getting condo units or unit sale is we need some sort of tort reform or legislative reform for the legal aspect of it. Because we see a lot of developer clients who are hesitant to go that route, because of the exposure to liability that comes with the cost of the project. So that liability means that there's a statute of limitations on condo buildings for with the owners can seek any compensation for any defects on the building, right. So in our market space here is, I believe, a seven year timeframe after the product is built, that those owners can come back with a lawsuit for any sort of defective or problem So developers generally are much less hesitant to go that route. Because selling 100 units, while it may be more profitable leading a law liability trail, where one building one apartment building that has 100 rental units has only one owner. So even though they could be sued for, you know, seven years after, that problem is still only one claim. With a condo building, if you've got 100 units, that can be multiplied by 100. To start looking at things that are more like a class action lawsuit, where it's multiplied a lot, as opposed to a single, right. That is a big problem that we have not yet quite over come through, you know, the legal reform and stuff that could really benefit a lot of the American homeownership market. We're starting to see more condo projects just as the apartment market is becoming a little bit more saturated. And, you know, the economics of that liability are starting to make a little more sense. Developers are willing to take it on because there's a higher reward, higher demand for condos and ownership than rental, but it is slow and coming.

**Nick**
Yeah, that's a very interesting perspective that we hadn't really thought about in terms of the developer side and the liability. So thank you for pointing that out. And like we mentioned, our target market, so to speak, is young adults and kind of the economic, social and political issues they're facing in the homeownership market and why it's so difficult for them to buy. When you're designing and building, are you thinking about a specific target market in general? Or is it just about creating affordable housing for everyone?

**Steven**
Yeah, we usually have a pretty specific target demographic in mind when we're looking at designing buildings like that. It is hard, we often don't have the ability to hear things in a direction if it is a rental or condo the decision tends to lie with our developers and our client. I'm not sure if that's an adequate answer for what you're looking.

**Nick**
I guess you guys are looking at developing, you say affordable housing, and when you're thinking about that, like what exactly does affordable housing to you mean? Is it in terms of just the economics in terms of income? Or is it, are you looking at the cost of building like, what exactly are you focused on most?

**Steven**
Okay, so turning this back to the affordable housing conversation, affordable housing, tend to be focused a lot more on rentals, and purchases, definitely. So affordable in terms of it being a rental unit, and the techniques that we are trying to employ to get more affordable housing. For one, there's a lot of legislative stuff happening in the Pacific Northwest up there with an economic incentive for building affordable housing. So we have half the number of sort of legislative items here is generally referred to as the: HALA, which is the housing and low income initiative or something like that. But if you search HALA, Seattle on a lot of information on that, and what that is done, then to create incentives for development of affordable housing, through zoning kind of free. So you can get a break on the density of a building that you're trying to build, if you're doing so many affordable housing units, or you might be able to build higher or without a certain set that if you're meeting low income, or affordable housing standard rate. So that's one way of incentivizing us that our local jurisdictions, Seattle, and Portland has kind of gone down. From our perspective, you know, we try to keep construction costs as low as possible on projects. And that's done through increasing density on the unit going towards smaller units. And we also have a number of projects that are starting to employ new construction techniques. So modular construction. And so what modular construction is, is decreasing the amount of time that it takes to construct a project in the field, which results in savings on the developer side in terms of how long they're holding that lending through construction, not necessarily the cost per square foot of the structure itself. But the financing of that bridge loan or that construction loan is a shorter time period because most of the construction is done offsite. Assembly happens onsite in a much quicker time period. So that's one way that we're going after affordable housing, in kind of a new construction and innovation. So last one that I say is getting even further away from apartments themselves, or condos. But we've seen a number of projects that employed what we call a congregate living. And so that is much more similar to what you might see in older style European where they might have shared an amenity space. So you get these small rental unit there, sometimes the smallest 250-275 square-foot that have a bathroom, basic face for a bed or fold out bed that sometimes that might be useful small kitchen app, or like a mini fridge almost more like a motel room, hotel room, and then they have a larger share kitchen space and amenity spaces for congregation that happen elsewhere in the building. So they tend to be groups like six of those rooms around one common and kitchen an amenity space. And that helps a lot in those units can be smaller and rented at a much lower rate. And, and provide a much denser unit, as well. They kind of shift the conversation from for developers from a cost per square foot to a per door. which then helps expand a little bit more money on construction because there is return on that investment is higher. Not necessary lowering the cost of the construction, but increasing the costs are increasing the return on that investment. And then the final one that I say you guys should probably look into, we're starting to see more of is what we call these kinds of co-living spaces, the similar to that congregate housing. But taking it a step further where we're looking at, you

know, you might have multiple, two bedroom or one-bedroom units that are linked together in some way with a common amenities space. And it wouldn't be the kind of living facility that you might have an elderly parent who is living with you and helps provide childcare, but you still have your own unit, kind of separated, but co-mingled together around. And I think that is a potential that we're just barely starting, scratch the surface on. But particularly in center city, as we start to see more families living trying to stay within the city, that demand is going to grow. That is something that I can really relate to. And if I have a young family – I have two kids, they are four and two, and I recently moved outside of Seattle. I'm actually on one of the islands because, you know, finding space for a small family and in the city is very difficult, you know, a lot of these apartment buildings, and condo buildings that are being built, they build one- or two-bedroom apartments, you're not going to see a lot, three- or four-bedroom apartments built unless they're kind of the premium units, those penthouse level kinds of thing. So that affordable housing for younger families is a big problem in metropolitan areas that are starting to really grapple with.

**Nick**
Yeah, I mean, that's, I guess in terms of our focus and beyond adult, I think the last point you mentioned is perhaps the most relevant. It seems like a lot of people are putting off marriage and family formation because of there's just not enough housing in these denser cities. And that's definitely one reason then when they're finally ready to move, then they usually buy a house outside of the cities, like you're saying in the suburbs and make these long commutes. But that does seem like a solution. And they could build more of a family style, shared living space. And I'm just wondering, like, what do you think has been kind of the hesitation to pursue this route when it is being used in a country like Denmark that we're studying as well, where it's very common to have or least it was for a long time to have these shared living spaces and shared amenities. What do you think has been kind of the holdup, there's a political or social or just a combination of everything?

**Steven**
Really a combination of everything. From my experiences in Copenhagen from a cultural kind of thing. We have an American idol culture of you move away from home and kind of make it on your own. And that's really starting to change. But I don't think that that exists, the same rate within Denmark, that it's a little bit more accepted that you kind of didn't buy the house, or, you know, if your parents owned a flat, you might live with them and eventually take over ownership of that flat, that kind of thing where that is very rare in America. I think one, there's a big societal and cultural difference there. And then two you know, construction prices in the United States has historically always been a lot lower than what you see over in Denmark, materials, land, things like that, you know, we're always putting the availability of fresh land on the outskirts of the city. And that sort of suburban sprawl asset that when you're dealing with so much older countries like Denmark and your more limited land, you don't play How about those opportunities. So, it's harder for the economic forces, that those are really latch on take advantage of them. And I think there's also just a different perspective on what upward mobility in the United States versus Denmark? Yeah. Always, when I was in Denmark, who is a lot of a lot of younger people that I knew, you know, it was never, the whole idea of going to eventually go and buy my own house is not necessarily as central to the idea of independence as it is in the United States.

**Nick**
Then we were talking about your company as well. We kind of had this idea that a lot of the innovation and the companies that were talking to are socially driven, or nonprofits operating in this sphere, in large part because I don't know, we feel like the perhaps the government doesn't provide enough living options, as is. Because of that the kind of creative ideas have to come from outside, would you describe your company as something that's profit driven, or socially driven? Not that they're exclusive, obviously, but what what's kind of the, the motivation behind it?

**Steven**
We are a business; we are profit driven. We have to be creating solutions for our clients that return on their investment. Otherwise, we can't justify the work that we're doing. There are, you know, a lot of nonprofit organizations out there operating in that affordable housing sphere. But really, until you engage the market forces, it's hard to make a ton of innovation that just because the money and that kind of stuff, is not nearly the money that is available in market driven.

**Nick**
We were talking to another design architectural firm earlier this week and he actually mentioned that construction was labeled least innovative sector. Some McKinsey report mentioned that. And because of that, he almost feels that it's due for innovation, because it's been done in such a bureaucratic, slow, cost inefficient method that he feels like there's a lot of room for innovation. Is that sort of the impetus for your company to start? And where do you feel like innovation is? Maybe not most do but where can you see it going? And you're in the construction sector.

**Steven**
I totally agree with that. I think there's a lot of information out there that you'll be able to find about the slow rate of change within the construction industry compared to other industries. There is well, two different innovation routes that we pursue, currently around. That are, one a modular construction, turning away from your traditional kind of site build or piece by piece structure to building larger and larger chunks, doing more and more of it in a manufacturing, a setting where we have high quality control and can start to automate processes we are way, way behind other industries. But I mean, you can almost think of it as going from, you know, bicycle builders or car builders, where it was a bespoke kind of one off vehicle that was built one at a time to them sort of assembly line manufacturing kind of thing. Which is how almost all of our modern product to build but not housing and not building is so big trends within the construction industry is heading towards that route of manufacturing. And there's a couple different routes that people are taking, we work mostly with volumetric modular, so they're essentially creating a box, when you think of like, each unit, or a portion of the unit is a box that is delivered and staked and you're stacking up all these boxes, tying them together to build. There's other companies that are going the route of more finer elements, panalization, where they're only building, you know, specific panel. But then those panels get added together in a certain way on site. And so it's pretty, it's getting broken down into the products that are manufactured more off site than on site. That's one that you're going to see the other trends that we use, is starting to be used. More easily used, when you get into the kind of panalization or modular construction is designed foundation. So starting to look at, you know, a site, and you've got some specific

constraints of it, we've got some constraints of the modules that we're working with construction. And can you start to build that into essentially an algorithm for stacking and finding those elements, so that you can run iterations on a site, maximize density, you can optimize for a number of different factors, and then presented a number of solutions that were to meet that pro forma and get that off the table. And then we can start to evaluate them for aesthetic composition. marketability, kind of adding that board design elements back into it once we can get the numbers off the table. So it's pretty to be more data driven, on the design side of things that can allow for innovation down the road.

**Edith**
So what you're saying is like you guys, really based yourself off of the technology and figuring how technology works in this kind of field of housing. So how important is the technology for your company? And do you see it grow as, like a learning and a thing that you guys use as you're moving along in the process?

**Steven**
For me, it's very important. I mean, it's how we're making the most innovation is through increasing our use of technology. That being said, architecture is really slow to adopt that. You know, we talked about machine learning or jacking algorithm, or getting into anything like that. Almost every industry and teaching here, computer science, and things like that are far ahead of what architecture, architecture is always a very late adopter of that kind of technology. But at the same time, there are there's a definitely do that. It's one of the biggest challenges that I have a job actually pushing forward, that kind of technology versus them mentality of Well, you could just sit down and draw it with a couple of lines

**Nick**
know, you guys are currently offering the Pacific Northwest, like you mentioned, and we've obviously learned that a lot of construction is very localized a lot of housing crisis is or very localized, based on a lot of different factors. Do you still see your kind of business model and your technology being applicable to other parts of the US and perhaps even other parts of the world?

**Steven**
Yeah, I think more and more, more and more, it is the clickable to a wider scope Talking about things like you know, modular construction, the larger techniques can be applied in a ton of different markets. The thing that is always going to really keep it very local, at least in the United States, is that almost every jurisdiction sets its own zoning standards, and some sort of subjective design guidelines. And that's the kind of thing that you almost always get in and understand that local municipalities the context, you're working with it to design. And that limits a lot of technology from being more globally implemented, if you will.

**Nick**
And then you even mentioned, I mean, you know, it's a familiar with other housing markets, like you mentioned, Denmark, is there somewhere that you look to whether it's a local region or state or another country, where you feel like they're more progressive, both in terms of the building laws, and it also in terms of adopting innovation in the construction sector? Yeah, European

market is definitely more innovative in Social Housing and the kind of congregate housing, conglomerate rated high dense housing that we have. The single-family market, though, is an American piece that is not replicated elsewhere in the world, in my opinion. So, we always kind of have to digest any of those presidents that we can find within that American context? You know, an example, like talking about co housing kind of thing that those ideas are coming out of Europe, initially, and they're starting to gain a foothold here, as market demand, more of that kind of housing. Did you have any other big questions that we missed?

**Edith**
But I did have a question in terms of like, do you think policies have like a big impact on how the housing market is driven? Because in Europe, here, there's more policies that may kind of like constraint how developers work. And you think there's pros and cons into how policy shapes, the housing market?

**Steven**
Yeah, policy has a huge impact on the housing market it sets. A lot of what additional cost of construction are, you know, particularly here in Seattle, we have if you're not building affordable housing, you have to pay into a fund mandatory but a far less than, like, local housing agencies use to build affordable housing with. And that is a big part of how affordable housing right now. And it's a big problem, because then you're relying on a government agency to carry out that construction. Rather than a, you know, private entity that might have more to get it quickly. Move a little bit slower there. I think modifying legislation particularly around some of the stuff with condos versus apartment, and the sort of reform around lawsuits that can happen there is a big thing that could happen fairly quickly to drive a lot more affordable home ownership opportunities. And there's been a couple of efforts that have stalled out here that's happening that's pretty powerful lobbies around that kind of stuff. answers your question but yeah, it's a very, very big role.

**Nick**
Oh, those were those are the big questions that I had. So, we definitely appreciate your input in different perspective. It's always nice talking to the experts and learning something new every time we talk and kind of building on that, so we really appreciate the time that you've given us.

**Steven**
I would kind of asked in return if you guys wouldn't mind maybe including me as you finalize your document and research.

# APPENDIX C

Interview with Brynn Mortensen from SLChamber on April 12, 2019

*Note.* The audio recording and transcription of the interview are available on the USB drive.

**Nick**
Alright, we always like to start, these are just a little bit of background on our project before we learn about what you're up to. So the two of us are both Americans. I'm from California, Edith is from New York, and we're doing our masters at Copenhagen Business School, we decided to write about the housing crisis and the housing markets in these two countries, specifically in regards to what is being done with young adult homeownership, what trends are we seeing in the market. And we're kind of looking at the macro context there. And to get the other side of the picture and look more localized and see the solutions. We're talking to a lot of companies, both nonprofits, private enterprises, working to fight for affordable housing, and homeownership opportunities, a lot of different markets. And that's why we're talking to you today. And we really appreciate you kind of sharing what you guys are doing. So with that, I just like token up with kind of what you guys are trying to achieve, and some of the main challenges you're finding right now.

**Brynn**
So I work with the Salt Lake Chamber, which is a little deceiving by name, capital city by name but statewide by mission. So we run the state Chamber of Commerce Association. And so all local chambers throughout the state of Utah run through our umbrella, and we do public policy and government relations works for all of them. And so kind of our offering is about a year and a half ago, we had business leaders coming to us saying that their employees were having hard time either finding housing or getting into the housing market. And so for us, that's all housing new to the city and rentals. And so what we did is we commissioned a study through our policy institute here, and I'm happy to send that over to you well, but we commissioned a study that kind of looked at Utah's housing market moving back a generation, which is considered 26 years at a current generation and then a generation forward. And with that, we found that we are, we are going to turn into your California, a New York, our housing crisis is increasing have a gap, we have a shortage of 54,000 units for families that we have here, we're experiencing tremendous growth for the next 40 years. And so what we are trying to do a ensure that the American dream of homeownership is a reality for all Utahns, especially us the younger generation, the millennials, and the children that, you know, they'll be able to have a home. So just to kind of give you numbers and the median price or average price of the home across the Wasatch Front, 90% of the world's population is located near a 90 mile corridor, which is the Wasatch Front. And so back in 1991, the median price home on the Wasatch Front with \$125,000. And today that's up to \$387,000. Next Generation, we're looking at over \$700,000. I know that probably seems cheap to you, our wages and everything is not keeping up we found that we have two components to the housing gap. We one is this housing shortage that 54,000 units gap to his NIMBYsim and not in my backyard, we have no pull up the mote now that I'm here, don't allow density. Leave me with my acre or half acre lot. And that's just not sustainable. Third is our construction labor shortage. And for every five individuals that are retiring from the trade for only training one. And so that's leading to the increasing prices. And then lastly, is are tariffs, material costs. And so we've kind of broken them down and they're trying to do a targeted

approach on each of these components. So NIMBYsim, we have lots of public awareness campaign. And again, I can send you all of this to the media, TV, radio, kind of all areas, talking about Utah's tremendous growth, talking about how was half past month planning, that our population is coming, it's our children and our grandchildren, the majority of our population growth is internal. And so we have to can smartly for it so that we're doing public outreach to just in NIMBYsim. And we are you'd want two program the bill to success and the construction pathway. Both of these get into high school getting high school student internship as stackable credentials to be technical colleges and local universities, get them trained in the trades as well as experience so they're making money and to try to rebuild it that work for we just ended the legislative session in Utah 45 days actually. And with that, we had two big pieces of legislation come out, also need the briefs on those if you want, but one is actually kind of received national attention, but it feels laundry list of 24 different housing policies that will either encouraged. And just more affordable options, whether it's a land trust, and it requires municipality better on a chance at four doors to implement four of them. Or if they're not on the transit corridor to implement three of them to receive State funding. We're hoping to picking up for requiring municipalities to go out to implement housing policies that will take care housing for the future and secure, lower housing for all, all income levels. We also had one clarified referendum, and the process that that goes through to work through the NIMBYsim. Over the last six months I have visited with the City Council hear in Utah and talk to them about what they need to be doing all of our big decisions start or happen at a local level. Cach city make their own zoning, density the all of those decisions. And so we've been out and advocating for smart growth asking you taking the data, we commissioned asking them to implement XYZ telling them where they're at in modern compounding. And we really just started to educate them on the need to plan for the future. And then, unfortunately, there's not a lot we as the chamber can do with the trade, and all of that, but we are working with our delegation, but not one kind of more out of our control. So that's kind of like a quick debrief of everything we're doing. And we have businesses that came to this coalition from the top. I can send you the stats as well, but just I want to say 70 different broad based businesses throughout the state who paid membership to come together help us with orchestrate the goals and the steps we are doing and for the campaign we received a couple of national grants

**Nick**
Great, thank you so much for that comprehensive summary. We're just kind of curious, do you think public policy just not keeping up with the times? Or do you feel like they're actively just not changing? Or like, how do you see all the policies as you're trying to change developing and kind of the challenges there?

**Brynn**
So, I'll tell you, it's hard because I know each state is different policy and comparing different nations here in Utah we're required to have a moderate-income housing plan, part of their general plan. But so until last year, for the last 30 years, suggested, and then last legislative session, it was required, but there was no nothing, no, nothing happened if you didn't comply, there was no penalty. And so this year, there's actually the penalty that you won't receive transportation funding. And so I think that's good. We've had great success in here in Utah with the policies that we've had, but as time changes, our population changes. We have to update those needs. So that was kind of my big push is we need to stop thinking in silos and stop thinking about how Utah

has been and recognize the growth that we're experiencing recognizing that things have to change. we had a lot of pushback on the city council visits and educating of. And people didn't want to believe it, people didn't believe that there was a problem. But through this effort, policies are changing, there's only a new bad acting. An overall policy is changing. And so I think I next hurdle is going to be the general public city council make the decision, and they're starting to we're seeing this to these are giving it they're starting to make this legislative decision, a referendum will pop up, you know, the next day. And so how we can educate the general public, but the future children or grandchildren that you're saying no, to be able to have a home. And so that's kind of our big hurdle now that we've updated those policies and more forward thinking

**Edith**
So, ever question about, what do you feel about the front of technology within this kind of organization? Are you guys using the technology at hand now kind of built into where the construction workers and labor that is currently lacking, or is it just purely trying to fix the system as it is right now?

**Brynn**
We have an app that is called 'The Keys to Success.' I don't know what the app is called. But there's an app that high school students are using, when they get there's prizes like finger on the class, you get a point every time you use the app, by the time you reach, blah, blah, point, you get a gift card, or whatever it is, to be a part of that app, the students are required to go through and do just the survey selecting which careers and path what they're interested in. With that, if they choose any that has to do with the construction, or trade. they're automatically put into this bill to Success Program that I talked about the automatic are receiving notifications for internships, for courses, offered at the local Technical College, which is free to them while they're in high school. And so, we're really trying to capitalize with that younger generation who lives in love that technology of how to better educate, and it also gets push notification, email to their parents, their parents are up to date on different opportunities for them as well. And then a lot of our companies to educate the federal property through colleges.

**Nick**
So, then I'm also wondering, we've talked with a lot of different developers and affordable housing. And a lot of them aren't necessarily focused on ownership versus rental properties, mainly because it's out of their control. And it's also up to the city and things like that. You're one of the first people that we've talked to that as explicitly mentioned, homeownership prices and things like that. Do you feel that ownership is a key goal compared to just affordable rental properties? Do you make that distinction? Are you more just concerned with affordable living options for people?

**Brynn**
We are more concerned rental, new or existing, but the goal is people are too able to move up that ladder, whether it's getting in at the bottom and moving up into, you know, that really nice house with the top or if it's just moving into homeownership, we believe that everyone should have the ability to own their own home. There's, but that we all have to enter. You think that on the ladder, we all have some point. And so, making sure that we're not having to spend all of our income just to be able to have somewhere else to live.

**Nick**
Yeah, absolutely. And then I'm also wondering, you're also one of the first groups that it seems like has not just targeted young adults, but families. You mentioned on your website; you've talked about it today. Do you feel like this is the main group that you have to look after? Because whether they're being ignored or just for future generations? Is this something you're explicitly targeting? When you say we want to help young adults? Or is it more just these people are the most of need? Or how do you kind of make that distinction as well?

**Brynn**
For us we represent the people not only those business leaders that we represent that all of their employees. And so that's why we're family, we're, we're looking out for our workforce and our future workforce. We don't want to educate our children here and then have the ship them off. To someone that's more affordable to live, we want them to be contributors to society to enjoy the quality of life that we've built here and be able to those they keep the Utah the best place to live, work and visit.

**Edith**
So would you say this project is socially motivated? Or is there like, people under like, that have some profit to go with this?

**Brynn**
Like the membership? It's both we have it is mostly social while being driven. And we do have obviously builders who are in the coalition developers and relevant, and they all know that we aren't out there advocating for a certain development we don't get involved with there's a referendum other than saying, you know, think about your long term growth, we're kind of more a picture. And, and so there are builders involved, who, obviously were more development, but they know that we're not pushing for that we just asked them to be a part for their expertise for there. And I was not a land use housing expert when I started this job and really had to rely on explain the process to me as I learned.

**Nick**
Then we also know that, like you're saying that these issues are very localized because of different building codes and all the legislative issues. But do you look to any other what other cities or states or even countries because it is an international project, and you look at their housing market, and you see that they have maybe different ways of living or different policies that are more supportive? Are there any that you cite or look to as being more beneficial to the kind of goals you're trying to achieve?

**Brynn**
We absolutely do that, we are in the process of commissioning So the coalition launched last year, we just entering our second year, that's may. And we're launching and are commissioning another study that said best practices study looking at throughout the state, you know, which municipalities are doing things well, also looking nationally? What is going on in different state? I will tell you, California, that I believe took away land use power and gave it to the state around transportation.

**Nick**
I believe that is, yeah, part of the project.

**Brynn**
Our legislature has looked at that in a different and different land use policies that are being implemented throughout the state, that's kind of what drove our bid this year. But so yes, and we're looking to kind of incorporate more of what's going on, when this study comes out in September.

**Nick**
And is there one specific policy that if you could say, we could pass this or change this, that would make the biggest difference, either in the housing market or explicitly for homeownership for young adults?

**Brynn**
I don't know if I can say, there is an approach to our citizens agree or not going to referendum if they don't like the decision.

**Nick**
That's understandable. Then you've also talked a lot about kind of the general population being a little bit behind in terms of supporting to feel like there's a little bit of a, whether it's a generational divide, or just social divide for people who have already kind of work their way up and establish themselves as homeowners. Do you think there's potential because they have already kind of taken care of themselves that they're less supportive of making an extra effort to help those who are not in that position? Or how would you describe that kind of generational difference?

**Brynn**
A we made a public sentiment research, it was a polling and focus groups and then survey and with over 2000 responded here in cypress county and what we found is we thought in are marketing campaign we need to target, that younger generation, that is struggling to find housing and wants to enter into the market. But what we found is that between 35 and 64, with children over the age of eight and moderate political views, those that's our target audience. And those are the ones that we have the most sway over to convince and to change from NIMBY are those that have children that are either starting to look for housing or will soon. And so that was amazing to us, because we thought it would only be that just when we were brainstorming without really that younger generation was understand, but we found that if we message it, right, help them know that it's for their children and grandchildren.

**Nick**
That was interesting. Actually! Great, I think those are the big kind of points that we wanted to speak with you about and sound like you had a lot of extra surveys and statistics that we'd love to get from you. So we'll definitely follow up with you on those. And I don't have anything else. So we just want to thank you for your time and for everything you're doing. And if we have any more questions, we hope you don't mind has fallen up with you.

Interview with Ronald Hall from the Palo Alto Housing Corporation on April 15, 2019

*Notes.*
1. The audio recording and transcription of the interview are available on the USB drive.
2. Full disclosure: Ronald Hall is the father of Nick Villemoes Hall.

**Nick**
Alright, just to start off, I'll give background on our side of the research project. So we're two students researching the housing market in the US, and Denmark and comparing the two, we're specifically focusing on how to help young adults become homeowners and some of the challenges they're facing in the macro contextual environment, and how these are different in the two countries. So first with our background, we'd like to get a little bit of brief background of your work.

**Ronald**
I am a board member of the Palo Alto Housing Corporation for over 30 years. We are a nonprofit that buy, renovate, build low-income affordable housing in Palo Alto and now, other cities on the Peninsula.

**Nick**
Very good. And what are some of the main challenge that you find there that you found in the past 30 years when trying to develop affordable housing.

**Ronald**
The two main challenges are the resistance of the community and/or neighborhood, in general, and the second challenge is financing. You either have private sector financing, public sector financing. These are really the jurisdictions you're working in. Or alternative financing in the form of tax credits, bonds, grants and impact fees from the various cities,

**Nick**
Have you found that these challenges have become more or less difficult in the past 30 years of you working in it?

**Ronald**
Well, certainly the challenges with the city and the neighborhoods are about the same as they have been for 30 years. Certainly the ability of a non-profit proposing developments rather than the city proposing developments makes things a little bit easier. But in general, we still have to get through the whole public awareness process at each location. The financing has definitely become difficult because very few jurisdictions in California, especially, have redevelopment agencies and/ or bond initiatives that support affordable housing.

**Nick**
And when you're talking about affordable housing, that means both rentals and ownership properties because our project is focusing mainly on homeownership. That's kind of the angle we're interested in specifically. How much control are determining whether the property is going

to be ownership or rental do you have? And what are some of the deciding factors when developing one or the other?

**Ronald**
At the moment, there is very little financing for ownership. We have tax credit financing through the state and federal government. We have grants and loans through the Veterans Administration. We have various local initiatives; the county just passed a $400 million bond issue for homeless, basically homeless housing which we can tap into, but it's very restrictive. The only way we get below market rate units for sale now is if we negotiate with a condominium or home builder to provide a certain amount of those units to our below market rate program. Typically they opt for a cash payout instead of units now.

**Nick**
And then we're also talking about ownership, one of the other companies that we spoke to mentioned the liability issue was one deterrent for building condominiums, in the terms that whoever bought the condo had the opportunity to sue the developer. Is that a problem that you see as well in this area? Or is that more of a local problem?

**Ronald**
I not quite sure what you mean by liability.

**Nick**
In terms of there's an issue with the property the homeowner can then sue the developer if something goes wrong.

**Ronald**
Well in the state of California under the condominium development roles, the Condominium Association has, which is made up of a group of the tenants, is 10 years to determine if there are any major defects or hidden faults. Recently in the state of California, new home builders are coming under similar restrictions for hidden defects and faults in the new home business. So, in our program, typically we asked the buyers to sell back to us at a pro-rated amount and then we rehab them and try to put them back on the market for new buyers. The liabilities that we have are only in the condominium environment; the new home environment, we handle those ourselves.

**Nick**
We found that a lot of affordable housing projects are built specifically with a target market in mind, whether it's veterans or helping the homeless or the mentally disabled. Is this also the case that you have found and do you ever build specifically with young adults in mind?

**Ronald**
One of the reasons why we have targeted population is the financing is targeted financing. The state and federal rules, sometimes local rules, require us to build or plan to build for a targeted population. A number of the apartment buildings that we have purchased on our own over the years, we're able to self-finance and self-stabilize the rent. And in some cases, we have students, young adults or young families in those.

**Nick**
Then we know that you also have a background as a general contractor and building yourself. We've found that the construction sector is one of the least innovative sectors around but it seems to be changing a lot, maybe because it has historically been unable to develop. What are some of the innovations that you're seeing in the construction sector, whether it's modular construction or things like that, that you see potentially making a difference in terms of being able to build it cheaper rates or developing more affordable housing?

**Ronald**
Well, certainly the innovation of using new materials, whether it's steel instead of wood or pre-fabricated sections instead of site-built, pre-fabricated structural members, has all helped promote building in our area in California. We're in earthquake zone one, which has the most stringent structural requirements of any area, which makes it more expensive. A lot of the jurisdictions require amenities or exterior facades that make the complexes blend in with the community, which typically aren't financed by any of the normal financing processes. So we have to come up with additional funds to build those. Certainly pre-manufactured housing and housing units has become more popular. Again, it's been a little difficult in the Bay Area to adapt those to the strict seismic standards that are needed. We are pursuing one or two projects with the possibility of using pre-manufactured housing units. About 60% of the project will be built with pre-manufactured units. The other 40% is the foundation, parking garage and exterior stairs. We haven't found that there's necessarily a cost savings in the construction; there appears to be a cost savings in time saved. Thus, there's a savings in interest paid on the construction financing. In some of our projects that 20 to 25 percent savings on construction savings may help. We're not entirely sure yet, especially since pre-manufactured housing requires a lot more upfront money, which has to be financed over the period.

**Nick**
Going back to policies, you talked about the community was kind of slow to adapt, perhaps because they've already purchased homeownership and they've solidified themselves, that they're a little hesitant to build in their own backyard. What are some of the big policies that you feel like are restricting the development of affordable housing or new homes?

**Ronald**
There are a lot of zoning regulations which prohibit multi-family housing in a lot of sections of the city. We have finally gotten Palo Alto to not look at the units per acre but look at the square footage per acre. But it's taken about 10 years to get them to do that. And they now have a zone that can be applied to a piece of property for affordable housing based on square footage rather than units. Not only has this taken a long time, but the discussion in the neighborhoods -- factors on parking, additional traffic, pedestrian safety and other issues, which they tend to ascribe are, "Well there's no housing around, there's no grocery stores around here, there's no medical care around here, etc., etc." But we try to concentrate our projects on transportation lines and in areas on the edge of R1 zone.

**Nick**

I know that you've also experienced living and working in Denmark, and that is obviously the focus of our paper. Do you have any general comparisons that you can make in terms of the ability to develop not just affordable housing, but just maybe the construction sector in general? Or do you have any insights there?

**Ronald**
The regulations that we fall under given tax -- state and federal tax credit -- is that we have to follow the Davis-Bacon rules. And the David-Bacon rules typically are that all our subcontractors have to pay union wages -- wages that are based on a union scale, which means that we're paying a lot more than a non-union scale. The other thing is that in overseas, and certainly in some other states, there's a lot of money that's provided by public entities to provide affordable housing -- whether it's pension funds or public, straight public money. In California, public entities cannot build low-income housing, affordable housing, without having a public vote for the use of those funds. And we've found that nobody will vote in favor. So that's why we formed a non-profit and we accept money from public entities and other institutions and are not subject to the voting rules. We still have had lawsuits and public referendums about our proposed housing projects in some jurisdictions. Whereas in overseas and other jurisdictions, there's no question that they're going to build them, they're going to build.

**Nick**
One design and architecture firm we spoke to said that they were trying to build more apartments and condos that had shared spaces, shared amenities, and things like that as a way to increase the number of units they could fit in one property. They referenced this as a more of a European-style of living. Is this something that you're seeing has the potential to create more homes and affordable homes and as a potential solution?

**Ronald**
We've used that model in our SRO development, single room occupancy development, which basically is a studio apartment with a small refrigerator and small one-burner-cooktop, with a common kitchen area, common meeting area, common library area, areas for social services etc. And that way we have been able to utilize that model to a certain extent. Because land is so expensive here it's been difficult to come up with practical solutions other than apartment buildings in shared space arrangements.

**Nick**
And it also seems to be more and more difficult for young people to secure financing for mortgages, both because of the increasing cost of homes and the general stricter loan regulations that we've seen since the financial crash. Because of that we're looking at a lot of alternative ways of financing. One method that you've discussed before are BMRs [Below Market Rate]. Could you elaborate on that and if you had any other ideas on this matter?

**Ronald**
Well the BMR program is twofold. One is houses or duplexes that we have constructed on land it's been granted to us through the sub-division process. We basically fully have underwritten, the land has been underwritten already, and we designed the construction in such a way to be as efficient as possible. And sold those to typically families and, depending on how long they stay

there, they will get Consumer Price Index appreciation and some more depending on the condition of the house when they resell it back to us. We have a certain amount of condominiums that we have both purchased or been granted to us in the development process both for seniors and families. There's a few single, smaller ones and we basically do the same thing.

**Ronald**
One of the difficulties is if the Homeowners Association decides in those condominiums that it needs a new roof or needs upgrades that the reserves don't cover, they put an assessment on the condominium. Sometimes those assessments add up to such a point that the resale cost we have to put on them pushes them out of the affordable category, and we've had to subsidize those in other ways.

**Nick**
Okay. And we also focus a lot on ownership specifically in our research and not as much on the affordable rental sector. But do you see this as a transitioner or sort of a way for people to climb the ladder, so to speak, where they start in affordable housing, perhaps, and renting and because of the lower prices they can save up and eventually become homeowners?

**Ronald**
Well, for sure we have a number of families and groups, sometimes more than one generation, that transition through the most affordable units we have to the more median-income units we have and we have probably about 10% a year that transition out of our program into market rate, either rental or housing. Both because income and savings. We have about 900 affordable units, it serves about 2400 tenants. And we have a long waiting list but individuals and families to transition out of our organization.

**Nick**
Great. Those were my principal questions. Do you have any last thoughts or big areas that you feel are important to mention when discussing affordable housing and homeownership, whether the historical trends are the way things are going now?

**Ronald**
Well, I think the, you know, a big impediment is this issue of community reluctance. Everybody agrees on the need for housing and affordable housing, but they don't seem to support, or at least in a lot of jurisdictions, don't support individual projects. So that's one. Two is in the communities that have now become leaders in developing affordable housing have developed partnerships with big commercial developers -- Google, Facebook, etc. -- as they expand their non-residential campuses, in participating in housing programs of all sorts. Both low-income and market rate. And I think that these non-residential companies are now starting to realize the importance of their contribution. So I feel like that the public sector, the non-profit sector, the housing sector needs to get more backing from these new expanding companies. And then the third thing is, as you mentioned, financing. Is that in order to get private financing for individuals that are starting out, the society needs to develop a different criteria on how they lend money. They're perfectly willing to lend money for student loans that may or may not get paid back but

they're not at all interested in providing either rental, despositing assistance or new homebuyer assistance. And that needs to change.

**Nick**

You mentioned, one thing before I let you go. We talked to a group out in Utah. We were talking a lot about the enforcement of affordable housing policies on the city level. That historically all the cities and regions have had mandates in terms of the amount of affordable housing that they've had to build. But there's been no enforcement. So because of that cities haven't followed suit. Now that seems to be changing in wake of these housing crisis. And they're being punished in different ways. Is this something that's also the case in California?

**Ronald**

Certainly in the Bay Area. The Association Bay Area Governments (ABAG) has published housing need demands for the area for 15 years and recently has allotted all the different cities and jurisdictions a proportion of that need based on the jobs-housing imbalance, in particular, but also based on open space and other infill possibilities. ABAG does not have any legislative power -- it's basically an association of Bay Area governments that advises and proposes. Recently the state of California has passed two legislative amendments. SB35. is one that is requiring cities to pass individual legislation that streamlines the process of developing not only housing but affordable housing near transit centers. There's a lot of jurisdictions that are opposing that; they feel like it's stepping on the individual rights of the communities and cities. But we just got our first SB35 project approved in Redwood City. 69 units of affordable housing, half vets and half adults with disabilities. We hope to do more. SB50 is now been proposed by legislators in the Senate in California, which puts more teeth into the state, requiring local jurisdictions to provide housing and affordable housing. We'll have to see how it goes.

**Nick**

That was all the questions I had. Thank you so much for your time.

## APPENDIX E

Interview with Peder Kjøgx from CPH Facilitation on April 26, 2019

*Note.* The poor quality of the audio recording made it impossible to transcribe the conversation, but the audio file is still available on the USB drive.

**Notes**

- Define difference between buying housing and other types of living (e.g. co-op)
    - Renting in Copenhagen: business development (i.e., build house and rent and then earn money – profit driven)
    - 1860s-70s: building healthy living, rental housing
    - Living options: homeownership, own coop, public rent, private rent
- Investors are major builders (e.g., in Nordhavn)
    - Buy land from city
        - Struggle is over what land and what type of housing
        - City fight over 'affordable housing' for students or pensioners or others with 'needs'
            - DK: 25% of new buildings for social housing (for youths, affordable for 'normal' employments)
        - In some areas can buy and rent out (doesn't help housing market, affordability) others must live there
    - Private investors (e.g., Blackwater) investing, rebuilding, selling in short-term
- Discussion of profit for house owners
- More people not living in their homes
    - Instead own and rent/Airbnb their apartments
    - Not in interest of city strategy
    - Danes living abroad or elsewhere than in CPH
    - Edith: Proposal of "empty tax"
- Another 'approach': "mingle" different social, age, income groups in new buildings
    - Build communities where they assist each other
        - E.g., elderly couple can take care of young couple's children
- Peder's argument: pension funds (owned by employees/groups like trade unions) should buy housing/apartments to set up long-term profit streams rather than aim for short-term goals
- 3 levels of government: national, state, municipality
    - Smallest government focus on cities
    - State focuses on rural/urban divide
- 'Flexicurity': both in society and in housing specifically
- City planning: value who is going to live there and livability
    - more than just 'housing,' which is just buildings/homes
- Indicator of innovation: time house/building lasts
    - Newer buildings may be cheaper but get torn down sooner
        - e.g. buildings in CPH that were built 100+ years ago that still exist
    - Timescale to measure 'productiveness': how many generations?

- Livability
    - Does area support well-being, growth, equality, security of people/area
        - Both living, working, visiting, building, institutions/businesses
            - Connects many actors involved in area
    - How attractive is the area?
- Real-world examples
    - E.g. of when he worked with Ramboll
    - E.g. of Elemental (as seen in Louisana) building in Peru
        - Build with help of citizens living there (<u>co-creation</u>/<u>co-creating innovation</u>)
    - E.g. in Norrebro schools
        - Previously had fences around schools before talking with students/families and decided to tear down fences
            - Became their backyard and kept it clean, felt responsible – money saved given to families to invest in area
- Securing housing for next generation
    - Who is responsible?
    - How does this differ between countries?

Recommended references:

- Newspaper article: Politken "Var det noget med et værelse til 6.000 kr. om måneden?
- Book: 2030 Now

## APPENDIX F

The emailed responses from Marc Lund Andersen with The Knowledge Centre for Housing Economics on April 25, 2019 and April 26, 2019

*Notes.*
1. The first 11 questions were responded to on April 25, 2019. The next four questions were responded to on April 26, 2019. All the responses have not been edited.
2. The full responses are available on the USB drive.

**1. Are policies becoming more or less supportive toward homeownership?**

I wouldn't say much is changing these years. The recent years Finanstilsynet has implemented a set a new rules tightening the requirements and rules for homeowners. Some of the rules have been focused on the largest cities Copenhagen and Aarhus. In general the rules have been implemented trying to avoid a housing bubble. So although the rules makes it more difficult to become a home owner it has merely been to stop a potential housing bubble – not to try to be more supportive becoming a renter vs. a home owner.

**2. What are the main obstacles that prevent young adults from finding affordable housing and becoming homeowners in Denmark?**

I assume we a speaking of young people who have finished their education. Well one of the new rules is – that the rules has become more strict in terms of the downpayment required. It has been the tradition for decades that people had to deliver at least 5% of the house prices In up front downpayment. But the banks and mortgage institutes had fairly free rights and gave a lot of people access to buy homes even without any downpayment. Today this has changed. You have to have saved the 5% before buying.

a. A second obstacles is the fast changing demand for housing in the outside areas and in the largest cities. Young people more frequently more into the cities than a decade ago. Especially for studying purposes. But there aren't many relevant jobs no longer in the outside areas. That has caused a high pressure on prices in the largest cities and made it more difficult for young people to become home owners in the beginning of their career with limited income.

**3. Do you think that young adults are underserved in the homeownership market?**

I wouldn't say that they are underserved in this sentence. I do not believe that It is everybodys human right to own a home. The heightening demand, lack of building land and the result of higher prices in the largest cities western world is a global phenomenon as a result of the deindustrialization.

**4. What is one policy change that could make the biggest difference toward helping young adults in the housing market?**

Well – a ton of answers could be made to this question. But many of them would be a question of distribution of wealth policy. So I will focus on a potential fair solution. In Denmark we do not have taxes on capital gains for home owners making a profit from their sales of housing. People have to come up with at least 5% of down payment. It would make sense for young people to invest their running savings in stocks and bond. But the thing is – that first of all, stocks a more risky assets. But more important. Savers have to pay somewhere between 27 to 42% on their profits from stocks. So there is a clear mismatch between those young people trying to save money for the downpayment and paying 27% to 42% percent. This is actually a general unfair setup we have. But it hits younger people extra because the lack of incentive to invest in stocks, the risk of doing so and unbeneficial tax rules prevents them from doing so. We can probably forget to get the politicians to equal out these rules. But in some countries they have savings account free of tax when the purpose is to buy homes. This would be a fairly easy and fair thing to implement.

**5. How has the local level public opinion on housing affected the development of affordable housing within their neighborhoods?**

Not sure I understand this correct. But in general when we speak of affordable housing – we speak of so called public housing og social housing. Well each municipality have historically had there own right to build as much social housing as the wanted.

**6. What are the most important trends you are noticing with young adults and homeownership? How do they differ from other demographics of homeowners?**

A bit low beginning income in the beginning of their career, low down payment, demand for housing in the largest cities but greater educations that decades ago where it was possible for more people to become home owners. Furthermore they one homes that aren't so called "ruins". They want well maintained houses and a willing to pay for it unless you are a skilled and working in the build environment/craftsmen.

**7. Although the housing challenges facing young people are evident internationally, the characteristics vary on a country and regional level. What is policy or solution from elsewhere that could be beneficial to your target market?**

See question 4.

**8. How is technology and innovation being used in the housing and city development sector to help provide affordable housing?**

It think this is one of the things where we have to admit that the building sector have a problem and have almost always had it. The increases in efficiencies in the build environment is one of the lowest. It simple it very difficult to build cheap. Everybody talks about it. But its simple not easy. It is a general problem. Every apartment today has to be build with the so called wet rooms (toilet and kitchen) and those a the most costly rooms. But with todays living standard – no one wants apartments without any of these rooms. Dorm apartments (kollegieværelse) a one of the only ways to build significantly cheaper.

**9. What are the main drivers behind the decreasing affordability of ownership and rental properties?**

Think I have already explained this in the earlier questions.

**10. Is the supply of affordable housing being limited by a lack of innovation in the affordable housing development sector?**

Lack of innovation and lack of increases in building efficiencies I would say yes.

**11. Is the housing market in Denmark seen primarily a government administered good or a private household responsibility?**

Do not understand the question. Your welcome to elaborate further on this and I will try to answer.

**1. In the US we have studied a number of start-ups that offer alternative ways to secure finances for down payments and home purchases. These are generally aimed toward households that are unable or excluded from standard mortgages. Based on how accessible the mortgage market is in Denmark, do you believe that there is a need or any room for similar innovations in mortgages or alternative ways to finance home purchases?**

Well Denmark is generally known as having one of the best mortgage systems in the world. So to be honest – I do not think Denmark is an easy country to implement innovation I that area.

**2. We have read that Blackstone has invested heavily in Denmark recently, as it has in other European countries. Have you seen an increase in private companies investing in Danish housing properties and real estate? If so, what effect has this had on the housing market and prices?**

Im not that much into that business but my perception is not that it has had that big of an influence yet. Furthermore you have to remember that most of these investing have been done in the space of rental apartments. But Ejendom Danmark might be able to give you a wider answer to that question.

**3. What percentage of new residential developments are 'affordable' (roughly defined as affordable to median income households) compared to high-end properties? Does the government have any control over this split?**

I do not have an absolute view on that. Do not know if that kind of calculation have been made recently. The thing is, that all demand is drawing into the larger cities and the place nearby. So we generally do not make that kind of land based view on affordability. One of my colleagues are in charge of our affordability model which you can also find on a webpage. But its more a question of how far out in the country that people a pressured depending on their household income. But in general – when it comes to newly build residential places I would guess that the number is pretty close to zero. Even newly build social housing are quite expensive because of the price model used in social housing which is cost based. This means that even newly build social housing are fairly expensive in the beginning although a bit cheaper than private rental.

**4. You mentioned the tax incentive to investing in residential property, is it becoming more common for Danish people or companies to use residential properties as an investment opportunity? As well, is the government doing anything to regulate this market?**

To become a home owner and create wealth that way isn't a new idea. And the tax incentives have always been in place. Although you could say that the incentive got even stronger when we introduced the stop the development of the yearly running property taxation I 2002. The same rule that will be changed again in 2021 because of a governmental decision. But remember that this does not have anything to do with capital taxation. So capital gains will also be exempt from taxation in the future.

APPENDIX G

The emailed responses from Frederik Busck with CPH Village on May 1, 2019

*Notes.*
1. The emailed responses were originally in Danish. We received approval of the English translations from Frederik Busck on May 1, 2019. Both the Danish and English translations are provided below.
2. The full responses are available on the USB drive.

**1. Why does your company target students? After completing their studies, does your company help tenants transition to home ownership or other affordable housing options?**

Vores firma er skabt med stor inspiration i Porter og Kramers artikel, "Creating Shared Value". Således er udgangspunktet og målsætningen for vores forretning at løse samfundsproblemer. Vi har zoomet ind på urbaniseringen og derfra studieboliger i DK, da det var her vi med færrest midler kunne gøre den største forskel på kort sigt.

Our company is created with great inspiration from Porter and Kramer's article, "Creating Shared Value". Thus, the starting point and objective of our business is to solve social problems. We have zoomed in on urbanization and from there, student housing in Denmark, as it was here that with the least amount of funds, we could make the biggest difference in the short-term.

**2. How do you define your target market? Age, demographics, gender, incomes?**

Vi bygger og driver co-livning studielandsbyer. Det er alene studerende, der kan bo hos os grundet lovgrundlaget, vi operer ud fra. Vi selekterer i vores ansøgere. Se vores hjemmeside og ansøgningsformular for mere info. 50/50 i køn, ligeligt mellem 8 uddannelseskatagorier (afledt indikator for indkomst). Dette for at sikre mangfoldighed og et - mener vi - rigere og bedre liv.

We build and run co-living student-villages. It is only students who can live with us because of the legal basis we operate under. We select our applicants. See our website and application form for more info. 50/50 in gender, equally between 8 education categories (a derived indicator of income). This is to ensure diversity and for – we believe – a richer and better life.

**3. What are the main obstacles that prevent young adults from finding affordable housing in Copenhagen and Denmark?**

Mange årsager. Heraf kan nævnes prisen på små lejemål, afledt af for lille udbud. Desuden unges studerendes ulyst til at lede efter bolig i forstaderne.

Many causes. These include the price of small rentals, derived from insufficient supply. In addition, the young students are not interested in looking for housing in the suburbs.

**4. What does affordable housing mean to your company and what sparked the innovation around CPH Village development?**

Betalelige huslejer er afgørende for vores firmas berettigelse. Ellers løser vi ikke problemer. Vores firmas udviklingshistorie kan du finde i denne film: https://vimeo.com/256399351

Payable rentals are crucial to our company's justification. Otherwise, we will not solve problems. You can find the history of our company's development in this film: https://vimeo.com/256399351

**5. Do you feel like the government is doing enough in the housing market? What is one policy change that could make the biggest difference toward helping young adults in the housing market?**

Vi har ledt arbejdet for at ændre planloven, som har muliggjort adgangen til enorme områder af ny jord til midlertidige studieboliger. Således er det ikke udbudet af jord, der er problemet længere. Nu ligger udfordringen i at få grundejere til at leje jord ud til midlertidge studieboliger samt i at få kommunlabestyrelser og forvaltninger til at fremme muligheden.

We have led the work to change planning laws, which has enabled access to huge areas of new land for temporary student housing. Thus, it is not the supply of land that is the problem anymore. Now, the challenge is to get landowners to rent land out to temporary student housing and to get municipal councils and administrations to promote the opportunity.

**6. Where does the financing to your company come from (e.g. private institutions, national or local governments)?**

Private investorer. Se proff.dk.

Private investors. See proff.dk.

**7. Is your business model driven by profit or is it socially motivated? How does that align with the mission of the company?**

Begge dele. Se ovenfor.

Both. See above.

**8. Although the housing challenges facing young people are evident internationally, the characteristics vary on a country and regional level. What is policy or solution from elsewhere that could be beneficial to your target market?**

Forlængelse af rammer for midlertidige studieboliger. I DK er det 10 år. I Sverige er det 15 år. Desuden kunne kan udvide til andre målgrupper end studerende i DK. Denne begrænsning findes ikke i Sverige.

Extension of framework for temporary student housing. In Denmark it is 10 years. In Sweden it is 15 years. In addition, it could be expanded to other target groups than students in Denmark. This restriction does not exist in Sweden.

**9. How does your company use technology and new construction innovation to help provide affordable housing?**

Vi bygger alene modulært og presser vores entreprenører til at arbejde industrielt og med digitale bygge- og drifts- og kvalitetsstyrinbgssystemer.

We only build modularly and push our contractors to work industrially and with digital building – and operating – and quality control systems.

**10. In your building projects, do you have control over whether the property will be available for rent or ownership? What are motivating factors for your choice?**

I vores forretningsmodel ejer vi bygningsmassen 100% og lejer ud. Dette sker for at sikre fuld kontrol over produkt og koncept samt for at sikre ligelig adgang for studerende uanset økonomisk råderum.

In our business model, we own the building stock 100% and rent out. This is done to ensure full control of the product and concept as well as to ensure equal access to students regardless of their financial flexibility.

## APPENDIX H

NVivo software supply code

### Nodes

| Name | Files | References |
|---|---|---|
| Business Models | 5 | 21 |
| Construction | 6 | 23 |
| Customer needs | 6 | 13 |
| Financing | 3 | 15 |
| Goverment Policy | 6 | 21 |
| Labor Market | 3 | 5 |

# APPENDIX I

The Excel spreadsheets for the demand-side analysis

*Note.* The files – one with the created charts used in the paper and one without – are available on the USB drive.