Planning for Mixed Use: Affordable for Whom?

Markus Moos, Tara Vinodrai, Nick Revington & Michael Seasons

To cite this article: Markus Moos, Tara Vinodrai, Nick Revington & Michael Seasons (2018) Planning for Mixed Use: Affordable for Whom?, Journal of the American Planning Association, 84:1, 7-20, DOI: 10.1080/01944363.2017.1406315

To link to this article:  https://doi.org/10.1080/01944363.2017.1406315
Planning for Mixed Use

Affordable for Whom?

Markus Moos, Tara Vinodrai, Nick Revington, and Michael Seasons

M ixing land uses is a policy widely advocated in North American cities to address contemporary planning goals such as increasing density, reducing sprawl, and creating diverse cities (Grant, 2002). Some disagreement exists over how to define and achieve mixed use, but most scholars and practitioners agree that mixed-use policies involve the “the co-location or immediate proximity of homes, workplaces and services in buildings, neighborhoods and districts” (Hirt, 2016, p. 134). Mixed-use policies are often implemented through zoning codes that allow for greater diversity of land uses than traditional, single-use zoning designations. One promise of mixed-use zoning is that it creates conditions enabling individuals from varied socioeconomic backgrounds to live together. This can only occur if individuals can afford to live there. We thus ask about the affordability of housing in mixed-use zones for different kinds of workers when there is reduced government support for affordable housing. In doing so, we raise an important distributional question: Mixed use for whom (Fainstein, 2010; Marcuse, 2016)?

We examine how housing affordability changed for different occupational groups in mixed-use zones in Toronto (Canada) from 1991 to 2006. We define housing affordability as spending no more than 30% of income on housing (Canada Mortgage and Housing Corporation [CMHC], 2014). We conduct a spatial analysis to understand how affordability changes for different types of workers in mixed-use zones compared with the rest of the city and metropolitan region. Our hypothesis is that by raising the amenity value of specific locations, mixed-use zones will see larger declines in affordability than the rest of the city and metropolitan region and that this impact will be larger for occupational groups whose incomes are negatively influenced by shifts toward a knowledge-based economy.

Toronto was an early adopter of mixed-use zoning in North America (Grant, 2002; Urban Land Institute, 2003). Toronto has also experienced occupational restructuring, increasing income inequality, rising downtown housing costs, and the retraction of government support for affordable housing (e.g., public housing); Toronto does not require the provision of...
below-market-rate units in private developments (Hulchanski, 2010; Rosen & Walks, 2014; Walks & August, 2008). Findings from Toronto may have broader implications for other North American cities experiencing similar changes in housing markets and occupational structure.

We begin by bringing together existing research on mixed-use developments and housing affordability, especially in the context of the shift to a knowledge-based economy. The next section provides an overview of planning, development, mixed-use zoning, and housing policy in Toronto. We then describe the data and analytical techniques. In the penultimate section we present our findings, highlighting how affordability in Toronto has decreased over time in mixed-use zones, particularly for workers in low-earning occupation groups. We conclude that in the absence of explicit housing affordability policies and in the face of growing income inequality due to occupational restructuring, mixed-use zoning may reduce housing affordability and thus social diversity, contrary to planners’ expectations (Grant, 2002; Talen, 2008).

Planners should consider additional tools and policy instruments that explicitly address housing affordability in mixed-use zones, such as inclusionary zoning or affordable housing trusts.

Mixed-Use Zoning, Housing Affordability, and the Knowledge Economy

We bring together two strands of research to explore whether housing affordability is maintained for all types of workers in mixed-use zoning under the conditions of reduced government support for affordable housing and a shift to a knowledge-based economy. There is an established literature on the benefits of mixed-use zoning and its application (Grant, 2002; Koster & Rouwendal, 2012; Rabianski, Gibler, Tidwell, & Clements, 2009). There is also a substantial literature that examines economic change in U.S. and Canadian cities, showing increasing spatial segregation by occupation due to the rise of the knowledge economy (Bunting, Walks, & Filion, 2004; Florida, 2014, 2017; Hulchanski, 2010; Moos, 2016; Rosen & Walks, 2014; Sassen, 2013). Bringing these literatures together provides important knowledge for planners so that they may evaluate how land use and housing policies (or a lack thereof) may contribute to increasing social and spatial segregation. Beyond income segregation, a city where some occupational groups are more likely to live in amenity-rich areas may lead to challenges in areas such as transportation; for instance, low-income service sector workers may be unable to find affordable housing near their places of work. We also respond in this study to calls for analyses to consider more explicitly the social equity perspective within planning policy, which requires consideration of dimensions of social class such as occupation (Marcuse, 2016).

Planning for Mixed Land Uses

The idea of mixing land uses is widely discussed in North American planning theory (Congress for the New Urbanism, 2001; Foord, 2010; Freestone, 2008; Hodge & Gordon, 2013; Hoppenbrouwer & Louw, 2005; Ratner & Goetz, 2013; Smart Growth Network, 2006; Song, Merlin, & Rodriguez, 2013). Few empirical studies, however, have directly examined the outcomes of mixed-use zoning (Hoppenbrouwer & Louw, 2005). Rowley (1996) describes a sense of “nostalgia and propaganda… overtaking research and analysis” (p. 85), and Grant (2002) notes that mixed use is almost like “gospel” for planners (p. 71). A large body of work, as a result, extols the virtues of mixing land uses, with little study or understanding of the outcomes of implementing mixed use through various policies and regulations, such as zoning (Rabianski et al., 2009).

Jane Jacobs (1961), one of the earliest proponents of mixing land use, asserted that mixed land uses were critical to creating vibrant, successful neighborhoods; her views were a reaction to the failed urban renewal projects of the 1950s and 1960s. For Jacobs, mixing land uses was about the proximity of different social groups in established, walkable neighborhoods with access to amenities and services. Mixed land uses offer a way, at least in theory, to undo the unintended consequences of segregated land uses, such as overreliance on private automobile transportation (Stevens, 2017). Mixed-use zones can be found across metropolitan regions, but they are often located in downtown or central city locations, where they are believed to promote environmental benefits such as shorter trip distances and reduced motorized transport use, public health benefits that result from the increased use of active transport, and economic benefits that occur when the development of urban amenities increases land values (Hirt, 2016). Segregated land uses, however, remain the predominant model of land use in both U.S. and Canadian cities.

Planning scholars thus argue that mixing land uses is a potentially powerful tool that can achieve improved walkability, increased transit use, intensified land use, and social mix and diversity (contrast with Grant, 2002; Hoppenbrouwer & Louw, 2005; Rabianski et al., 2009; Talen, 2005, 2008, 2015). In theory, mixed use can be implemented at various scales, ranging from the parcel to the
ability depends on specific circumstances such as the target 
Koster & Rouwendal, 2012).

increases in these locations (Dong, 2015; Duncan, 2011; 
tions where land values are high may lead to housing cost 
2004). Thus, increases in housing supply in central loca-
ties, as is often the case with housing in mixed-use areas 
Aurand, 2010; Cervero & Duncan, 2004; Song & Knaap, 
Mixed-use zoning should increase the supply of smaller units with lower prices/rents if there are higher density housing developments. Second, highly accessible units are more expensive and command higher prices if they are developed in proximity to transit and other amenities, as is often the case with housing in mixed-use areas (Aurand, 2010; Cervero & Duncan, 2004; Song & Knaap, 2004). Thus, increases in housing supply in central locations where land values are high may lead to housing cost increases in these locations (Dong, 2015; Duncan, 2011; Koster & Rouwendal, 2012).

The net effect of the two opposing impacts on affordability depends on specific circumstances such as the target market of new developments, the role of the government in mandating and/or building affordable housing, and whether there are changes in income. New housing developed in mixed-use zones in practice is often targeted to those who can afford the purchase of condominium apartments in amenity-rich downtown areas (Foord, 2010), such as workers in well-paid service sector or creative class jobs (Florida, 2014). Thus, planning for mixed-use developments in high-value central areas might facilitate the observed increase in the number of high-income earners in professional and service sector jobs living there (Hutton, 2004; Moos & Skaburskis, 2009; Skaburskis, 2012; Walks, 2001).

Affordability and Mixed-Use Zoning

Housing analysts and researchers generally measure affordability by the share of income spent on housing (CMHC, 2014; Hulchanski, 1995). Affordability is affected if there are changes to the cost of housing, such as prices or rents, or changes in income. Mixed-use zoning can influence affordability in two opposing ways. First, a greater mix of uses will reduce the cost of housing if it increases the housing supply and/or the diversity of housing types (Cao & Cory, 1982; Grant, 2002; Rabianski et al., 2009). Mixed-use zoning should increase the supply of smaller units with lower prices/rents if there are higher density housing developments. Second, highly accessible units are more expensive and command higher prices if they are developed in proximity to transit and other amenities, as is often the case with housing in mixed-use areas (Aurand, 2010; Cervero & Duncan, 2004; Song & Knaap, 2004). Thus, increases in housing supply in central locations where land values are high may lead to housing cost increases in these locations (Dong, 2015; Duncan, 2011; Koster & Rouwendal, 2012).

The net effect of the two opposing impacts on affordability depends on specific circumstances such as the target market of new developments, the role of the government in mandating and/or building affordable housing, and whether there are changes in income. New housing developed in mixed-use zones in practice is often targeted to those who can afford the purchase of condominium apartments in amenity-rich downtown areas (Foord, 2010), such as workers in well-paid service sector or creative class jobs (Florida, 2014). Thus, planning for mixed-use developments in high-value central areas might facilitate the observed increase in the number of high-income earners in professional and service sector jobs living there (Hutton, 2004; Moos & Skaburskis, 2009; Skaburskis, 2012; Walks, 2001).

Occupational Polarization

The growing popularity of mixed-use zoning also coincides with an increase in occupational polarization. There has been growth in upwardly mobile, knowledge-intensive professional and managerial occupations, as well as growth in low-skill service occupations, whereas employment in manufacturing occupations has declined (Florida, 2014, 2017; Marcuse, 2016; Sassen, 2013; Vinodrai, 2015). These changes in the occupational structure have occurred because of economic restructuring toward an information- and knowledge-based economy, especially through deindustrialization and the associated growth of well-paid service sector jobs or creative class occupations (Florida, 2014, 2017; Sassen, 2013; Vinodrai, 2015). In manufacturing’s stead, service-oriented occupations have risen in prominence, accounting for nearly all job growth in Canada and the United States in recent decades (Florida, 2017; Pew Research Center, 2015; Vinodrai, 2015). However, the growth in service occupations has occurred in a bifurcated manner, leading to an hourglass occupational structure with growth in high- and lower order service sector jobs (Florida, 2014; Pew Research Center, 2015; Sassen, 2013).

Occupational restructuring has increased income inequality in Canadian and U.S. cities (Bolton & Breau, 2014; Pew Research Center, 2015; Sassen, 2013).
example of a large, urban, knowledge-based economy

Third, as Canada’s largest city, Toronto constitutes an
Moriah, 2008; Johnson & Johnson, 2017; Suttor, 2016). Changes in occupational structure manifest in
housing markets in the form of increasing affordability
challenges and decreasing propensity to enter homeowner-
ship for those in lower paid occupational groups (Bruce &
Carter, 2003; Gathergood, 2011; Haurin & Gill, 1987;
Morizumi & Naoi, 2011; Robst, Deitz, & McGoldrick,
1999). Changes in occupational structure also produce a
distinct geography in which a growing share of workers in
higher order service occupations reside in central and
amenity-rich areas, and lower income service sector and
manufacturing employees are displaced and dispersed to
other parts of the city (Ley, 1996; Moos, 2016; Skaburskis,
2012; Walks, 2001). Changes in income structure thus alter
the spatial distribution of households not only by
income but also by social class, which can be measured
using occupational data (Florida, 2014; Ley, 1996; Marku-
sen, 2004).

In sum, the literature in planning and housing in-
cludes a wide range of studies that discuss and measure the
impacts of mixed land uses, density, and development on
housing costs (Aurand, 2010; DeLisle & Grissom, 2013;
Dong, 2015; Duncan, 2011; Koster & Rouwendal, 2012;
Song & Knaap, 2004). However, no empirical research
analyzes the affordability of housing in mixed-use zones in
the context of waning support for affordable housing by
the government and increasing income inequality due to
occupational restructuring. Our analysis demonstrates how
planners can identify who can afford to live in mixed-use
zones using an occupational lens (see Markusen, 2004). It
provides important insight into how planning for mixed
use may unintentionally facilitate increases in social and
spatial inequalities (measured using occupational data) if
not adopted in conjunction with explicit housing afford-
ability policies.

Planning for Mixed Use in Toronto

Toronto offers an ideal case study for examining how
affordability has changed over time in mixed-use zones for
three reasons. First, Toronto has a relatively long history of
mixed-use zoning. Second, the city has witnessed a pro-
longed retraction of government support for programs and
policies that address housing affordability (Hackworth &
Moriah, 2008; Johnson & Johnson, 2017; Suttor, 2016).
Third, as Canada’s largest city, Toronto constitutes an
example of a large, urban, knowledge-based economy
undergoing simultaneous shifts in labor and housing
markets (Gertler, Geddie, Hatch, & Rekers, 2014; Walks,
2001; Wolfe & Bramwell, 2016). Toronto has been experi-
encing occupational polarization and dramatic increases in
downtown housing prices through rampant gentrification
and growth in the high-rise condominium market (Hul-
chanski, 2010; Leslie & Hunt, 2013; Rosen & Walks,
2014). These dynamics have been experienced across larger
cities in North America, which thus offers a degree of comparability (Florida, 2017; Hackworth, 2007; Sassen,
2013).

Toronto’s urban planners were on the forefront of
those advocating for and implementing mixed-use zoning
(Grant, 2002). Although there was a proactive attempt at
creating mixed-use zoning, the decline of manufacturing
and other heavy industrial activities in the core meant that
there was less need to strictly enforce the separation of land
uses. In the 1960s, city planners began to encourage high-
density development with a mix of land uses in proximity
to subway stations at a time when the city’s transit network
was undergoing rapid expansion (Filion, 2007). Toronto
city planners sought to accommodate growth in the urban
downtown core throughout the 1970s and 1980s, issuing
official plans and policy documents calling for infill devel-
oment through mixed-use zoning along transit lines
(Grant, 2002). The city’s 1976 Central Area Plan sought to
courage residential and retail development in the bur-
geoning monofunctional office developments in the down-
town core, whereas the Metro Toronto regional govern-
ment’s Metroplan (official plan) of 1980 further reinforced
the focus on aligning mixed use with transit nodes and
corridors (Filion, 2007; Sewell, 1993).

The city officially codified mixed-use zoning into
Toronto’s regulatory framework in 1986 when the city
rewrote its zoning bylaw. The 1986 zoning bylaw defined
mixed-use zoning in the city of Toronto, explicitly allowing
for a wide variety of commercial, residential, and institu-
tional land uses (Bednar, Minichini, & Appleby, 2010;
City of Toronto, 1986; Darchen, 2013). The bylaw itself
did not provide direction on housing affordability or the
type or mix of residential units that were permissible. The
zoning bylaw was amended in 2013 when the City of
Toronto updated and harmonized the bylaw to reflect the
1998 amalgamation of the central city with several adjacent
municipalities. The 2013 zoning bylaw continues to reflect
an explicit focus on accommodating a mix of land uses but
does not include inclusionary zoning provisions or explicit
policy direction related to housing affordability (Bednar
et al., 2010; City of Toronto, 2013). Mixed-use develop-
ments exist throughout the Toronto area, but most of
Toronto’s mixed-use zones are located in the downtown
core because of the local political and planning history that focused on mixing land uses near transit stations.

Housing policy has also evolved in Toronto, leading first to an expansion and then to a retraction of government support for affordable housing. During the 1960s and 1970s governments in Canada at the local, provincial, and federal levels invested in public housing and provided support for low-income earners through rent supplement programs (Hulchanski & Shapcott, 2004; Suttor, 2016). Governments, including the City of Toronto, started to focus on social mix as a policy goal to be attained through the provision of a diversity of housing types, including the development of rent-garaged-to-income housing and the provision of support for housing built by cooperatives and the not-for-profit sectors (Johnson & Johnson, 2017; Suttor, 2016).

Many of these housing policies were dismantled in the 1990s when both the provincial and the federal governments increasingly left housing to be provided by the market by reducing expenditures on subsidized public housing, severely curtailing programs providing financial assistance to those with affordability needs, and downloading responsibility for public housing to local municipalities without matching funding (Hulchanski, 1995; Suttor, 2016). In the mid-1990s, the newly elected conservative provincial government made considerable cuts to public services, resulting in a substantial decline in investments in building new, dedicated, affordable rental housing stock (where rent is geared to income) as well as the privatization of existing public housing (Hulchanski, 2010; Johnson & Johnson, 2017; Suttor, 2016). In 1991, there were 58,930 rent-garaged-to-income housing units in the city of Toronto (about 9% of the city’s total housing stock), which increased in number to 71,540 by 2001 (but decreased in share to just less than 8% of the city’s total housing units; Suttor, 2014). The building of new rent-garaged-to-income housing units slowed across the city, with 23,800 units added between 1971 and 1981, 11,800 between 1981 and 1991, 11,310 between 1991 and 1996, and only 1,300 between 1996 and 2001 (Suttor, 2014). In the past the government built most of these units; however, that role has increasingly shifted to the not-for-profit sector, which commonly lacks funding to sustain them in the long term (Suttor, 2014, 2016). The share of rent-garaged-to-income units in downtown has changed little since the 1990s (Suttor, 2014).

Many argue, however, that need for these units has increased because of rising costs in the private market and increasing shares of low-income earners (Hackworth, 2008; Hulchanski, 2010; Walks & August, 2008). Other common housing affordability policies often found in the United States, such as housing trusts, have not been pursued, nor has the city used density bonuses, allowed under the Ontario Planning Act, to address housing affordability issues in the absence of support from senior levels of government (Bednar et al., 2010; CMHC 2017a, 2017b).

In Toronto, high-rise condominiums have become the most common type of housing in new central area developments (Rosen & Walks, 2014), where mixed-use zones are dominant, especially near major public transit routes. Mixed-use areas have seen the development of a large supply of smaller condominium apartments near transit and other amenities; density bonusing provisions have not included affordability clauses. These high-rise condominiums have ground floor retail or office space in some cases; in other cases, mixed use is achieved by the presence of buildings with other uses in the same city block. In the ownership market, condominium apartments are often seen as a more affordable alternative to single-family houses in the inner city. In Toronto (and other major Canadian cities), however, condominiums built for the ownership market are also a source of new rental housing, as investors buy and subsequently lease units (Rosen & Walks, 2014). Thirteen percent of renters in Toronto reside in condominium apartments (City of Toronto, 2017).

Toronto has also experienced growing income inequality, and low-income earners have moved from the downtown areas to the inner suburbs (Skaburskis, 2012; Walks, 2001). Hulchanski (2010) shows that Toronto neighborhoods follow one of three socioeconomic trajectories with a distinct geographic pattern, which he calls the “three cities within Toronto” (p. 3): areas with increasing social status, areas with decreasing social status, and areas with relatively stable social status. He shows that those areas with increasing social status are mostly located in central downtown locations and are mostly connected to transit. Hulchanski (2010) attributes these patterns to the restructuring of the urban economy, and—it is important to note—he points directly at the decline of the social safety net and the fact that the provincial and federal governments reduced and eventually withdrew from providing and supporting affordable housing (see Hulchanski, 1995; Rosen & Walks, 2014).

The City of Toronto pursued economic development strategies to create employment, as did many North American cities experiencing deindustrialization (Bradford & Bramwell, 2014; Hackworth, 2008; Wolfe & Gerlter, 2016). Toronto’s efforts included promoting cultural industries as a new source of employment and as a form of competition to attract and retain skilled creative class and knowledge economy workers to Toronto as well as developing strategies focused on nurturing knowledge-intensive industries (Darchen, 2013; Leslie & Hunt, 2013; Wolfe &
Table 1. Average income in 2011 constant Canadian dollars and percentage of the labor force for occupational categories in Toronto (Canada), 1991 and 2006.

<table>
<thead>
<tr>
<th>Occupational category</th>
<th>1991</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management occupations</td>
<td>$75,200 (11%)</td>
<td>$98,900 (9%)</td>
</tr>
<tr>
<td>Business occupations</td>
<td>$35,700 (24%)</td>
<td>$58,800 (20%)</td>
</tr>
<tr>
<td>Technical occupations</td>
<td>$60,600 (6%)</td>
<td>$66,900 (8%)</td>
</tr>
<tr>
<td>Health occupations</td>
<td>$56,600 (4%)</td>
<td>$62,800 (5%)</td>
</tr>
<tr>
<td>Social and public service occupations</td>
<td>$70,700 (6%)</td>
<td>$53,800 (7%)</td>
</tr>
<tr>
<td>Cultural occupations</td>
<td>$28,400 (4%)</td>
<td>$35,100 (5%)</td>
</tr>
<tr>
<td>Sales and service occupations</td>
<td>$27,400 (26%)</td>
<td>$28,300 (24%)</td>
</tr>
<tr>
<td>Trades occupations</td>
<td>$42,300 (12%)</td>
<td>$38,000 (13%)</td>
</tr>
<tr>
<td>Manufacturing occupations</td>
<td>$32,900 (8%)</td>
<td>$34,500 (9%)</td>
</tr>
</tbody>
</table>

Note: Percentages may not add to 100 because of rounding. Employment in primary industries was negligible and is therefore omitted. Source: Data from Statistics Canada, n.d.

Measuring Affordability in Toronto’s Mixed-Use Zones

In this study we examine housing affordability for different types of workers in mixed-use zones compared with the rest of the city of Toronto and metropolitan region between 1991 and 2006. This type of zonal analysis is common and a well-accepted method of capturing differences in relative levels of affordability (Bunting et al., 2004; Hulchanski, 2010; Moos & Skaburskis, 2010; Revington & Townsend, 2016; Skaburskis & Moos, 2008; Walks, 2001). Our spatial analysis examines the extent to which changes in affordability in mixed-use zones are unique to these areas versus simply a mirroring of changes across the entire metropolitan area. Few studies have explicitly examined housing affordability outcomes in mixed-use zones, let alone linked this question to particular types of workers (see Talen, 2010, for an exception). Our approach allows us to understand which types of workers are (or are not) able to afford to live in mixed-use zones and whether this has changed over time, thereby contributing to our understanding of how affordability changes in mixed-use zones are connected, in part, to the shift toward a knowledge-based economy that has resulted in greater income inequality (Florida, 2017; Sassen, 2013).

We use data from the Canadian Census of Population for the years 1991, 1996, 2001, and 2006 organized at the geographic level of enumeration areas (1991, 1996) and dissemination areas (2001, 2006) to calculate housing affordability for mixed-use zones, the rest of the city of Toronto, and the wider Toronto region. These data are the most fine grained publicly released. We selected the time frame based on data availability and comparability, with 1991 being the earliest year with variables comparable to those in subsequent years. We did not consider 2011 data reliable because the federal government decided to move to a voluntary National Household Survey in that year, resulting in bias and data suppression, especially for smaller geographic areas (Vinodrai & Moos, 2015). The government restored the mandatory census in 2016, but those data were not available at the time of this writing.

We identified mixed-use zones using Toronto’s zoning designations as of May 2005. In 2005, mixed-use zones accounted for approximately 13% of the area of the city of Toronto. Mixed-use zones are defined as those areas designated by the city as commercial residential (6% of the city area), mainstreet commercial residential (5%), or reinvestment area (1%). Institutional (1%) uses include no permanent housing developments. These zones have been relatively stable since the introduction of the 1986 zoning bylaw (Filion, 2007), which allows us to investigate trends within established mixed-use zones. Figure 1 shows that mixed-use zones were predominantly in the downtown core and along arterial roads at that time. The mixed-use zones fall within areas where researchers have documented substantial appreciation in housing values (Hulchanski, 2010; Skaburskis & Moos, 2008).

We constructed three housing affordability measures. The most common measure of housing affordability, the share of households spending more than 30% of income on housing (CMHC, 2014), was used to compare...
mixed-use zones with the rest of the city and the metropolitan region. Our analysis also explicitly focuses on the relationship between labor and housing markets by calculating affordability within mixed-use zones for nine broad occupational groupings described in Table 1 that cover the entire labor market. We adapted a slightly different measure of affordability for the nine occupational groups because of data availability. We measured average housing costs in mixed-use zones, the rest of the city, and the metropolitan region as a percentage of average individual income. We calculated housing costs as the owner’s annual major payments (including mortgage payments, utilities, municipal services, property taxes, and condominium fees if applicable) and as average gross rent for renters (including rent, utilities, and municipal services; Statistics Canada, 2010). Household income takes into account multiple earners contributing to housing expenditures, but we used average individual income, which is more reflective of the relationship of workers to regional labor markets and the urban economy (Bourne, 1993).  

Our final measure adjusts average housing costs for the number of rooms; this accounts for differences in the amount of housing consumed in relation to price (Moos & Skaburskis, 2010).

We drew inflation-adjusted income data for nine occupational groups from the Survey of Labour and Income Dynamics for 1991, 1996, 2001, and 2006. We report income data at the metropolitan level, rather than for the workers living inside or outside of mixed-use zones, because of data availability. Statistics Canada uses the National Occupational Classification for Statistics to group occupations on the basis of similarity in skill levels and tasks performed. This approach allows us to compare housing affordability for workers differentially affected by the restructuring of the urban economy: high-earning service sector occupations (management, business, technical, health), lower earning sector occupations (sales and service, social and public service, cultural), and blue-collar occupations (trades, manufacturing).

The study has limitations related to research design and data availability. Our research is limited to a single case study of Canada’s largest city. Canadian cities, however, follow many of the same planning traditions as their American counterparts (Hodge & Gordon, 2013). Toronto’s experience with mixed-use zoning can inform planners—especially those working in large North American cities that have undergone a transition to a knowledge-based economy—about the affordability challenges associated with implementing mixed-use zones. The analysis is also constrained by data availability, primarily because of the small levels of geography involved in constructing the data set. We faced several other data-related issues. First, income

Figure 1. Mixed-use zones in Toronto (Canada), 2005.
Note: In this article we define mixed-use zones as commercial residential (6% of the city area), mainstreet commercial residential (5%), and reinvestment area (1%). Institutional (1%) uses include no permanent housing developments. CMA = Census Metropolitan Area.
data were limited to nine broad occupational groups rather than more detailed occupational categories, and income data were reported at the regional level rather than separately for mixed-use zones and other areas of the city. Second, we would have preferred to use median values to express the central tendency of income data instead of average values; however, median values were not consistently available. Third, we assume that mixed-use zones have a built form that reflects this designation. We could have enhanced our analysis had we known the actual mix of housing options, including the prevalence of low-income, subsidized, or affordable housing that may influence average housing costs. This is a common constraint in housing affordability research (compare with Bunting et al., 2004; Hulchanski, 2010; Teixeira, 2014). Fourth, it would have been ideal to have precise data on the recipients of housing assistance, including their locations; these data were not available. Prior studies have demonstrated, however, the displacement of lower income earners from Toronto’s core areas and transit-accessible locations (Hulchanski, 2010; Stapleton, 2015). Our study provides novel insights into the potential affordability challenges associated with mixed-use zoning despite these limitations.

The Changing Affordability of Mixed-Use Zones in Toronto

We compare housing affordability in mixed-use zones and in other parts of the city using three metrics: 1) households spending more than 30% of income on housing, 2) average housing costs as a percentage of average individual income, and 3) the average housing cost adjusted for the number of rooms in housing in mixed-use zones relative to other areas of the city and the region as a whole. Table 2 compares the first two metrics for both owner and tenant households in mixed-use zones with other areas of the city in 1996 and 2006. The results show that housing in Toronto was generally less affordable in mixed-use zones.

Table 2. Housing affordability in Toronto (Canada): Mixed-use zones versus other areas.

<table>
<thead>
<tr>
<th>Area</th>
<th>Households paying more than 30% of income on housing</th>
<th>Average housing costs as a percentage of average individual income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed-use zones in the city of Toronto</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>Rest of the city of Toronto</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>Toronto Census Metropolitan Area</td>
<td>24%</td>
<td>27%</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, Census of Population (our own calculations).

Table 2 shows that the proportion of households spending more than 30% of income on housing increased between 1996 and 2006 in mixed-use zones and other areas of the city; however, this increase was greater in mixed-use zones for both those who owned and those who rented. By 2006, roughly 1 in 3 owner households was paying more than 30% of their income for housing in mixed-use zones, compared with approximately 1 in 4 in the rest of the city. Rental households in mixed-use zones were only slightly more likely to be above the 30% threshold (47%) than renters in the rest of the city (45%) or metropolitan area (46%), perhaps because of the remaining subsidized housing that existed in Toronto and because of additions to the rental stock through condominium construction (see Hulchanski, 2010). Rental households, however, remained considerably more likely to be above the 30% affordability threshold (47%) than owners (32%) in mixed-use zones.

Housing affordability improved across the study period when measured relative to average income. As Table 2 shows, housing affordability improved over the study period in mixed-use zones and in other areas when measured as a percentage of average income. Housing was slightly less affordable in mixed-use zones than in the rest of the city but slightly more affordable than in the rest of the metropolitan area by the end of the study period. This was true for owners as well as renters, although average rental costs were lower. Ownership remained less affordable than renting when we used the measure shown in Table 2.

Renting was a more affordable housing option than owning in mixed-use zones, but the number of dwelling units in ownership tenure more than doubled from 1991 to 2006. The overall number of units in the rental market, though still larger, increased by only 11%.

Our findings reflect work by Rosen and Walks (2014), who find that most new developments in downtown Toronto, many of which are located in mixed-use zones, have been condominium developments, with few rental units developed (see also Hulchanski, 2010). The
result has been a large increase in the ownership rate within mixed-use zones, from 27% in 1991 to 42% by 2006. By contrast, homeownership rates increased from 40% to 46% in the rest of the city and from 58% to 68% across the entire metropolitan area. The relatively higher increase in the ownership rate in mixed-use zones suggests that those low-income earners who cannot enter ownership markets because they lack a down payment would also find it increasingly difficult to locate rental stock there.

A final way of assessing the affordability of housing in mixed-use zones is to measure affordability on a cost per room basis. The average number of rooms in both owned and rental housing was lowest in mixed-use zones and highest for the metropolitan region as a whole. Table 3 reports data on the cost of housing in mixed-use zones relative to the rest of the city and the metropolitan region as a whole. Housing costs per room were more expensive in mixed-use zones than in other areas; this is consistent with earlier studies (Dong, 2015; Duncan, 2011; Koster & Rouwendal, 2012). The difference in housing costs between mixed-use zones and other areas of the city grew substantially between 1991 and 2006. In 1991, housing costs were 44% and 45% higher in mixed-use zones compared with the rest of the city and the metropolitan area. The difference in housing costs between mixed-use zones and other areas of the city grew substantially between 1991 and 2006. In 1991, housing costs were 44% and 45% higher in mixed-use zones compared with the metropolitan region for owning and renting, respectively; by 2006, housing costs were 59% and 64% higher in mixed-use zones compared with the metropolitan region for owning and renting, respectively. The only exception is that housing costs associated with ownership in mixed-use zones relative to non-mixed-use zones declined slightly from 27% to 25% between 1991 and 2006. Central area housing markets became less affordable compared with markets in the metropolitan area as a whole, and these changes were worse in mixed-use zones than the rest of the city.

Table 3. Relative cost per room of housing in the city of Toronto’s (Canada) mixed-use zones compared with other areas.

<table>
<thead>
<tr>
<th>Area</th>
<th>Own</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas outside of mixed-use zones in the city of Toronto</td>
<td>27%</td>
<td>25%</td>
</tr>
<tr>
<td>Toronto Census Metropolitan Area</td>
<td>44%</td>
<td>59%</td>
</tr>
</tbody>
</table>

Note: For example, ownership costs in mixed-use zones were 27% higher than those in non-mixed-use zones in 1991.
Source: Statistics Canada, Census of Population (our own calculations).

Figure 2. Housing affordability by occupation and tenure in Toronto’s (Canada) mixed-use zones, 1991–2006.
Note: Solid lines indicate occupational groups that improved their affordability position by the end of the study period, with housing costs equivalent to less than 30% of individual income. Dashed lines indicate occupational groups that did not improve their affordability position by the end of the period, with housing costs equivalent to greater than 30% of individual income.

Housing Affordability for Different Occupational Groups

Figure 2 shows the changing patterns of affordability by occupational group in the study period, differentiating between renters and owners. The figure also shows changes in affordability for different occupational groups, indicating those that improved their affordability position in the study period (solid line) and those that did not (dashed line). The occupational groups that benefitted were those that spent less of their income on housing in 1991 and finished the study period with housing costs representing less than 30% of their income.
average individual income. The 30% cutoff represents the point at which a single worker earning the average income for a given occupational group could live within a mixed-use zone without paying a disproportionate share of income on housing. Many of the types of jobs that fall into the occupational groups listed in this category are those that require postsecondary education and are characterized by a high degree of knowledge intensity (Florida, 2014; Markusen, 2004). These include management occupations, business occupations, technical occupations, and health occupations.

Figure 2 also shows the worsening affordability outcomes experienced by those occupational groups whose affordability position decreased over the study period (or improved but stayed well beyond the 30% affordability cutoff). These occupations include social and public service occupations, trades occupations, cultural occupations, sales and service occupations, and manufacturing occupations. Most jobs found within the occupational groups in this category are typified by routine work that is less knowledge intensive than that in the previous category.

Occupational groups experienced differentiated impacts on their ability to afford housing in mixed-use zones. In most cases, those occupations for whom housing was already most affordable in 1991 saw the greatest gains by 2006. There are two particularly noteworthy exceptions. Business workers saw affordability in mixed-use zones improve markedly: The average business worker would have paid 55% of his or her income to own housing in a mixed-use zone in 1991, but by 2006 this dropped to 34% of income. For renters, housing costs decreased from 41% to 24% of income in the same period. Social and public service workers, meanwhile, who fared second best at the start of the study period, saw affordability erode to the median rank by 2006. It is surprising that despite these shifts, between 1996 and 2006, business workers slightly decreased their share of the workforce occupying mixed-use zones, whereas social and public service workers increased their share from 10% to 14%, likely in part because of the changing location of employment in these sectors (Walks, 2001).

Managerial occupations stand out as faring the best across the study period. Those within this occupational class saw the highest increases in incomes among all occupational groups (Bourne et al., 2011) and thus had greater flexibility in choosing housing. The affordability of housing increased the most for those in managerial occupations, and there was a slightly higher share of managerial workers living in mixed-use zones by the end of the study period (14% in 2006 compared with 12% in 1996).

Sales and service occupations, in contrast, fared the worst. In 2006, ownership costs accounted for 71% of average occupational income, whereas rental costs accounted for 50%, virtually unchanged from 1991. Despite these affordability constraints, sales and service workers accounted for the second largest share of the workforce living in mixed-use zones, although they declined slightly from 22% in 1996 to 18% by 2006. This occupational group is broad enough, however, that these affordability constraints would not apply to the entire group evenly: The group includes a range of occupations, from police officers to janitors. It does include, however, many low-paying, low-skill jobs: the cashiers, cleaners, and cooks working in the businesses so often found within mixed-use zones whose average incomes are well below those of other occupational groups (Bourne et al., 2011). It may be that a sizeable proportion of those falling into this category have little choice but to live near work, even if it is unaffordable. This then puts a strain on other components of the household budget (although transportation costs may be lower in mixed-use zones).

Further spatial analysis reveals that housing in mixed-use zones became less affordable in the downtown core, and the mixed-use zones where affordability was maintained were increasingly found outward along arterial roads rather than in the higher density core. Overall, our analysis paints a picture consistent with general notions in the literature: The core of the city—the most lively and amenity-rich areas where people can live, work, and play in proximity—is increasingly unaffordable, especially to those in lower paid occupations (Bunting et al., 2004; Chapple, 2017; Hulchanski, 2010; Stapleton, 2015; Walks & Maaranen, 2008). Our research shows that the decline in affordability was more severe in mixed-use zones than in the rest of the city or the greater metropolitan area, creating a direct connection to planning policies and zoning regulations that aim to create a greater mix of uses.

Planning for Mixed Use Is Not Planning for All

Planners typically advocate mixed-use zoning as a way to reduce sprawl, create energetic and lively neighborhoods, promote active transportation, reduce auto use, and promote economic growth by attracting new and cutting-edge industries. We do not know, however, how mixed-use developments in the core of urban areas affect the supply of affordable housing over time when the public sector reduces or ceases efforts to provide affordable housing and does not incentivize the private sector to do so.

We explore two questions in this study: 1) Does mixed-use zoning preserve or improve housing affordability when the government reduces support for affordable housing? 2) Does it do so for all workers, especially in the
context of a shift to a knowledge-based economy? We find that ownership and rental housing in Toronto was generally less affordable within mixed-use zones than in areas not so zoned. We find that housing affordability improved over time in Toronto’s mixed-use zones, but only for those in the management, business, technical, and health occupations, whose incomes allowed them to pay the higher housing costs in those areas. Housing affordability, however, stagnated or worsened for those working in social and public service, trades, cultural, sales and service, and manufacturing occupations. Our findings suggest that housing in mixed-use zones is increasingly affordable only to those workers who are already in the best position to pay increasing housing costs.

Planners must recognize these issues and advocate for explicit housing affordability policies as an integral component of mixed-use zoning. Such affordable housing policies could include inclusionary zoning, density bonuses, or affordable housing trusts. Such affordability policies are common in some U.S. cities, but they are less common—and in some cases nonexistent—in Canadian cities. Moreover, each may only go part way to address affordability challenges.

Inclusionary zoning requires that developers provide a number of below-market-rate units in new developments with affordability targets for different income levels (Cala-vita & Grimes, 1998; CMHC, 2017b). Inclusionary zoning has to be approved provincially in Canada; it was not until 2016 that the Ontario Planning Act permitted local municipalities to implement inclusionary zoning. The City of Toronto is currently reviewing options for a local bylaw allowing for inclusionary zones, which may begin to address the affordability issues documented here. These policies have critics (Schuetz, Meltzer, & Been, 2007, 2010) but may be an important option.

Municipalities use density bonuses to incentivize developers to provide affordable housing, or other community amenities, in exchange for development rights that translate into higher densities. Ontario’s Planning Act allows density bonuses, but cities rarely include affordable housing provisions in new development agreements. Density bonuses do not automatically require developers to build affordable units and may not result in the sustained provision of affordable units (Freeman & Schuetz, 2016; Moore, 2016).

Housing trust funds allow not-for-profit housing providers to draw on dedicated investment funds, often established through public and—especially—private donations. Housing trust funds have had success in providing an ongoing revenue stream to not-for-profit housing providers. Housing trust funds, common in the United States, remain rare in the Canadian context, however (CMHC, 2017a). Inclusionary zoning, density bonuses, and housing trusts offer the potential to address Toronto’s challenges of reduced housing affordability in mixed-use zones, especially for low-skill, low-income workers. North American planners should consider how to use these policies to balance goals for mixed-use development with the inescapable conclusion that such areas can substantially reduce housing affordability, especially in places where a shift to the knowledge-based economy has resulted in increasing inequality.

Practitioners must be realistic about the unintentional consequences of promoting mixed-use zoning in the absence of government policies that provide affordable housing or incentivize developers to provide affordable housing as part of new mixed-use developments. Left unaddressed, mixed-use developments could increase the polarization of the urban economy, with those in low-wage and lower skilled occupations increasingly unable to afford housing in mixed-use zones.

Acknowledgments
We thank the journal’s editor and reviewers for their valuable comments that helped improve the paper in several important ways. All errors or omissions remain the responsibility of the authors.

Research Support
We would like to acknowledge financial support from the Faculty of Environment at the University of Waterloo and the Social Sciences and Humanities Research Council of Canada.

Supplemental Material
Supplemental data for this article can be found on the publisher’s website.

Notes
1. Enumeration areas and dissemination areas are census data collection units that are normally equivalent to one or more adjacent blocks within a census tract.
2. GIS analysis was used to spatially disaggregate and weight census data collected at the enumeration area and dissemination area levels and reallocate these data to mixed-use zones as defined using the 2005 City of Toronto zoning boundaries. A detailed account of this procedure is provided in the online Technical Appendix.
3. The same basic trends were evident when household income was used.
4. We excluded a tenth National Occupational Classification for Statistics grouping, occupations unique to primary industry, from the study because the group accounts for less than 1% of the Census Metropolitan Area workforce and annual income values are often suppressed because of sampling error.
5. Census Metropolitan Areas, by definition, represent regional labor markets with minimal intraregional variability. In Toronto, there are limited wage differentials within the regional labor market (Bourne et al., 2011); thus, this was not viewed as a limitation.
6. Similar results were obtained when costs were expressed per bedroom rather than per room.
7. Maps of the geography of housing affordability by occupational group are available online.

ORCID
Markus Moos, http://orcid.org/0000-0003-2667-8664
Tara Vinodrai, http://orcid.org/0000-0002-5734-7473
Nick Revington, http://orcid.org/0000-0001-5165-4440

References


