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New housing supply: Urban sprawl and densification

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Overview

While many Canadians prefer to live in low-density housing, the supply of these properties is linked to urban sprawl and attendant environmental and economic implications. This article examines recent trends in new housing supply and urban sprawl areas in selected Canadian cities. It also analyzes the characteristics of homeowners who live in neighbourhoods that have recently experienced urban sprawl.

This article studies Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. It also focuses selected analyses on the census metropolitan areas of Halifax, Ottawa–Gatineau (Ontario part), Toronto, Winnipeg, Edmonton and Vancouver.

Key findings

- Housing densification has occurred across Canada, with higher-density housing representing an increasing share of new residential properties.
- New single-detached houses had smaller property lots and more living spaces compared with the older stock, resulting in higher floor–space ratios.
- Among the census metropolitan areas analyzed, Winnipeg experienced the most sprawl by proportion of new housing development that occurred in urban sprawl communities.
- Homeowners who occupied their residential properties in urban sprawl neighbourhoods were more likely to be younger adults, in a couple and immigrants compared with owners who lived in established population centres.

Introduction

Many Canadians prefer to live in low-density housing, such as single-detached houses, with owners and renters of detached houses reporting higher levels of housing satisfaction than those in more compact dwellings (Fonberg & Schellenberg, 2019). However, the provision of this type of new housing tends to be limited in city centres because of an increasing scarcity of developable land. To address the mounting housing supply targets, large centres such as Toronto and Vancouver have recently amended by-laws to encourage the densification of areas formerly zoned for single-detached housing (Gouda, 2023; Jeffords, 2023). Consequently, residential construction is likely to become more densified, while the supply of new single-detached houses is expected to increasingly occur in city peripheries and contribute to the expansion of urban boundaries.

Rural and suburban areas are appealing for some Canadians, because these locations tend to be less noisy (Michaud et al., 2022) and often feature natural green spaces that people value (Brown et al., 2021). However, low-density housing development in rural areas is frequently associated with higher infrastructure costs (Ewing et al., 2014) and loss of farmland (Neptis, 2002). Sparse settlement patterns are also linked to higher greenhouse gas emissions, especially in terms of transportation and household heating (World Bank, 2021). As a result, urban expansion and public policies that accelerate sprawl are often active areas of debate (Knope, 2023).[1]

1. A known example is the Government of Ontario's attempt to amend legislation to allow development on the previously protected Greenbelt in 2022. The policy was later reversed because of significant pushbacks and controversies (Callan & D'Mello, 2023).

This article investigates trends in recent housing supply and urban sprawl areas from 2016 to 2021. While there are different ways of defining and measuring urban sprawl,[2] the one used in this article considers simultaneous growth in population and an increase of low-density housing at the edge of urban areas—this focus aims to emphasize the type of urban expansion that tends to have important environmental and socioeconomic implications (Moreno et al., 2021).

This article explores the characteristics of new property stock and shows an overall trend of housing densification. While higher-density housing represented an increasing share of new residential properties compared with older stock, the land use has also become more intense for new single-detached houses, as they featured more living spaces and smaller lots.

This study also examines new housing developments in large census metropolitan areas (CMAs) and finds that Winnipeg has experienced the most sprawl, as measured by the proportion of residential construction in urban sprawl areas from 2016 to 2021. Meanwhile, homeowners who occupied their properties in sprawl neighbourhoods were more likely to be younger adults, in a couple and immigrants compared with their counterparts living in population centres. Finally, owner-occupants of single-detached houses in the sprawl areas of Winnipeg and Edmonton had a higher median income compared with those living in the established population centres.

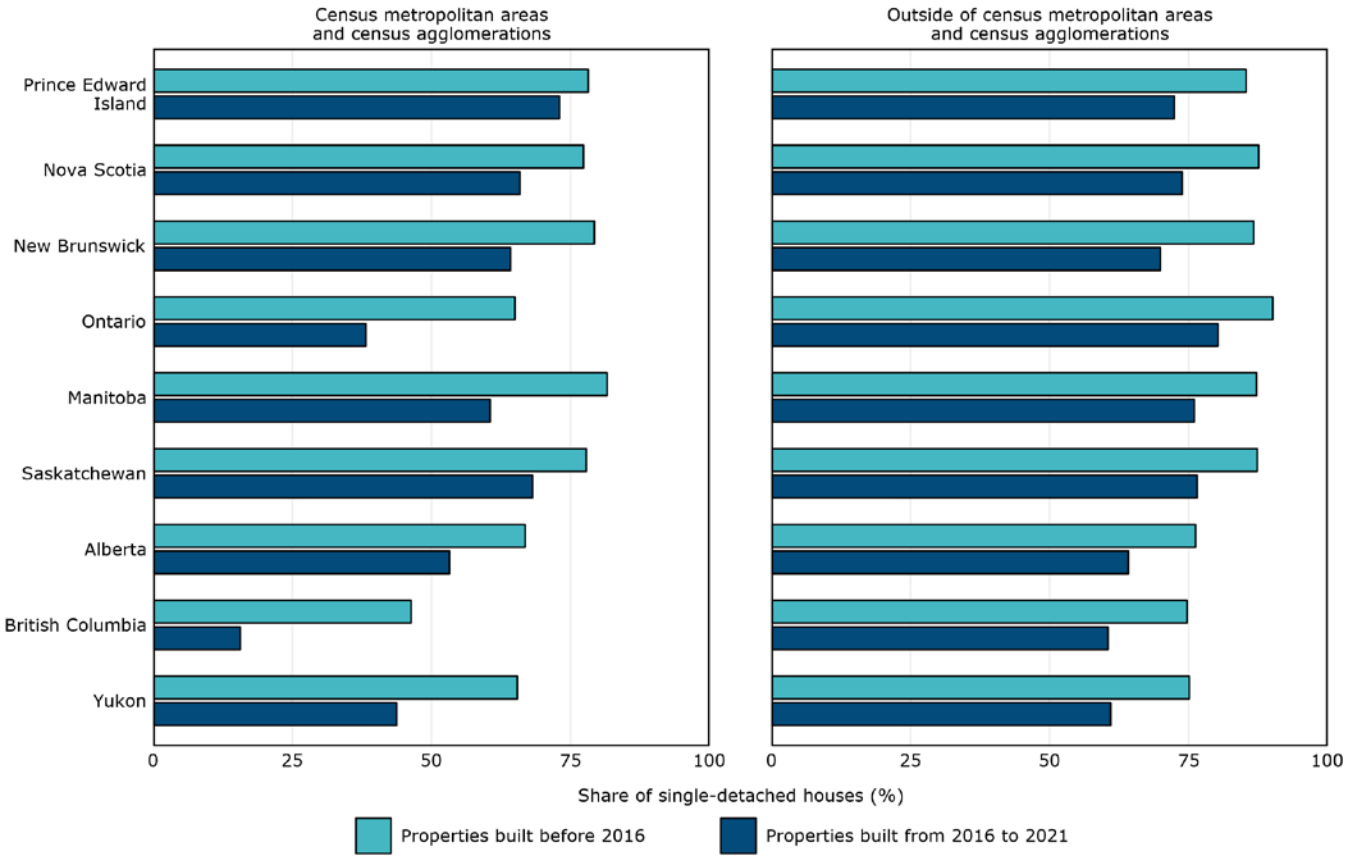
Housing is densifying across Canada

Single-detached houses represented a smaller proportion of residential properties built from 2016 to 2021 compared with their share of the stock built before 2016 (Chart 1). Consequently, the share of denser property types, such as row and semi-detached houses, was increasing. This pattern was found across all provinces and territories for which data were available, from dense metropolitan areas to sparse small-town communities.

Regardless of its location in Canada, more compact housing development has the potential to mitigate the environmental impact. Heat loss is lower for apartments, semi-detached houses and row houses than for single-detached units, meaning less energy is wasted when heating (Rubiera-Morollón & Garrido-Yserte, 2020). Furthermore, denser communities can avoid building over agricultural land, thereby conserving this finite resource (Hofmann et al., 2005).

2. Although there is no consensus on the definition of urban sprawl in the academic literature (e.g., Nechyba & Walsh, 2004; Ewing et al., 2014), it is generally agreed that sprawl takes place in rapidly growing areas on the urban fringe (Chin, 2002). Previous Statistics Canada publications have found higher population growth in suburbs compared with city centres in some census metropolitan areas (Statistics Canada, 2022) and in the expanding footprint of built-up areas (Statistics Canada, 2023b).

Chart 1
A smaller proportion of the new property stock is single-detached houses across Canada



Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

The following sections focus on the CMAs of Halifax, Ottawa–Gatineau (Ontario part), Toronto, Winnipeg, Edmonton and Vancouver to better understand housing densification and urban sprawl in some of Canada's large metropolitan areas.

New single-detached houses also become denser

Across the CMAs analyzed in this article, single-detached houses built from 2016 to 2021 generally had more living space on smaller lots compared with those built before 2016. The median lot size of these properties has decreased, compared with that of the older stock, in five out of six CMAs (Chart 2). The only exception was Halifax, driven by a large share of recent developments in rural areas, where a typical new single-detached property featured a larger lot than the older comparable properties.[3]

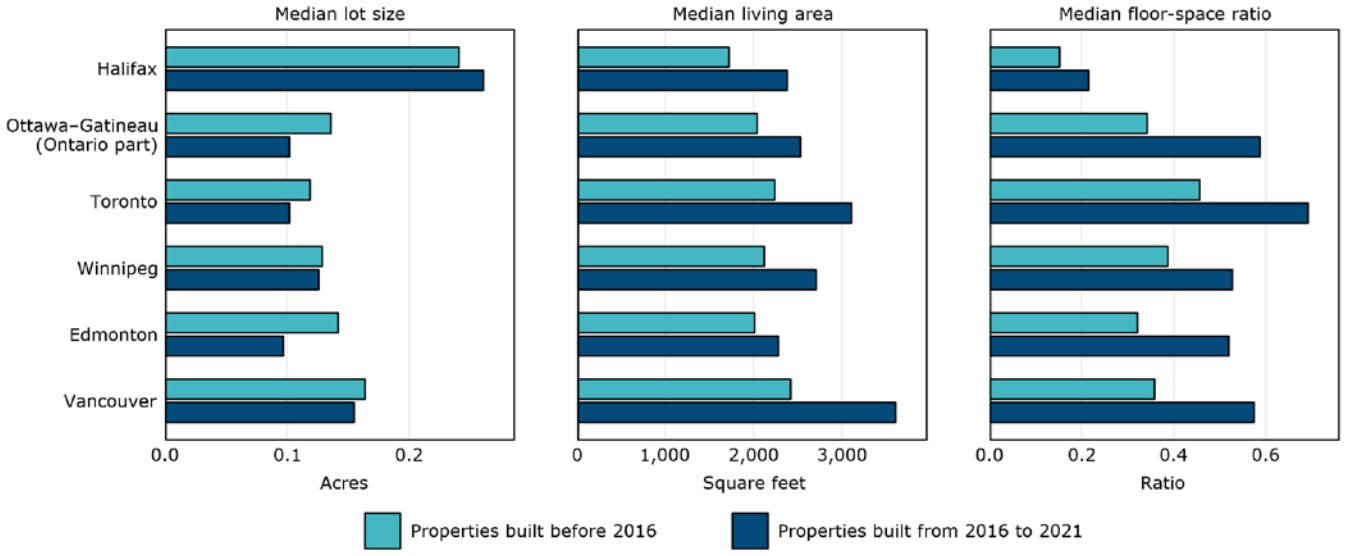
While lots have become smaller in general, living area has increased for new single-detached houses across all the CMAs analyzed. The median living area has increased the most in the more expensive markets—such as Vancouver (+49.2%) and Toronto (+38.8%)—compared with the older stock built before 2016. Among all single-detached houses built from 2016 to 2021, almost two in five (38.3%) in Vancouver and nearly one in four (24.8%) in Toronto featured more than 4,000 square feet of living space. This is in line with previous findings that showed single-detached houses in Vancouver were getting bigger while condominium apartments were getting smaller (Statistics Canada, 2023a). Meanwhile, even in a more affordable area such as Edmonton, there was still a 13.4% difference in the median living space of new single-detached properties relative to those built before 2016.

3. Canada is composed of population centres and rural areas. Statistics Canada designates dissemination blocks as population centres when they meet predefined density thresholds. The remaining areas after the delineation of population centres are dubbed rural areas. See the census definition of population centre for details.

The net effect of smaller lots and larger living spaces was a higher median floor–space ratio (defined as the ratio of the living area to the size of the lot)[4] for new single-detached houses than for comparable properties built before 2016. The difference in the floor–space ratio between recent and older properties was highest in the two Ontario CMAs—Ottawa–Gatineau (Ontario part) and Toronto—followed by Vancouver. By contrast, residential land was less intensely used in Halifax, where the median floor–space ratio was lower for new and older single-detached houses, compared with the other CMAs analyzed.

Overall, these results point to a more intensive use of land by single-detached houses. The environmental implications, however, are mixed. On one hand, denser cities are responsible for lower emissions per capita (World Bank, 2021) and allow for more dwellings to be built on the same acreage, potentially curbing the expansion of settled areas (Statistics Canada, 2023b). On the other hand, adding more living space adds to the carbon footprint of a home (Goldstein et al., 2020), as more finished spaces such as bedrooms require more heating.

Chart 2
The median lot size of single-detached houses decreases in most census metropolitan areas analyzed



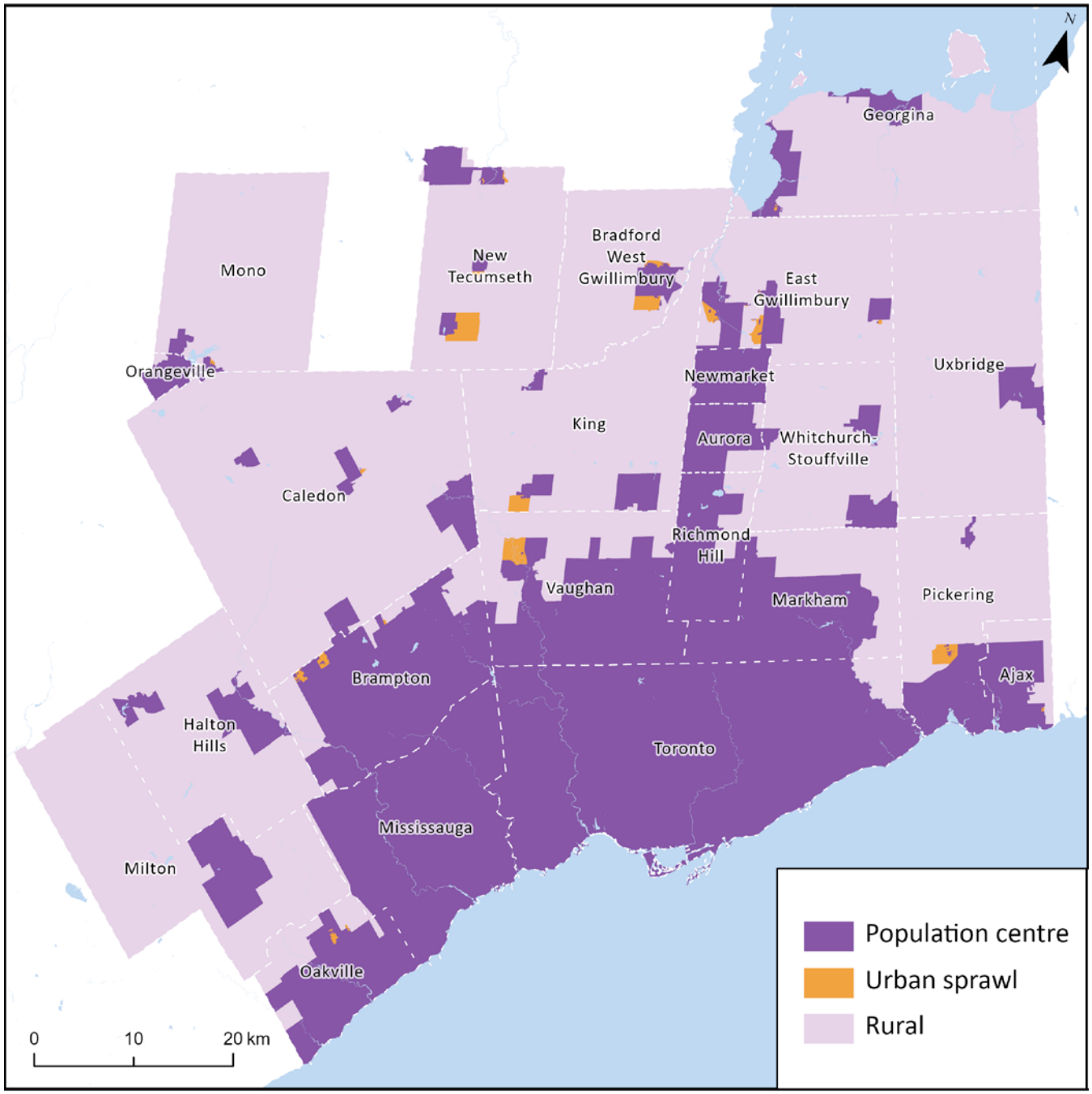
Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

Urban sprawl: New low-density homes in the suburbs of metropolitan regions

Urban sprawl is defined in this article as the addition of primarily single-detached houses in a recently urbanized dissemination block (DB).[5] The article focuses on low-density housing development, because it tends to have important environmental and socioeconomic implications according to the literature (Ewing et al., 2014; Rubiera-Morollón & Garrido-Yserte, 2020). Map 1 shows the populations centres, urban sprawl areas and rural areas in the Toronto CMA.[6]

4. If the floor–space ratio is less than one, the living area of the house is smaller than the land area of the property. If the ratio is one, then the living area is precisely as large as the property lot. Finally, if the ratio exceeds one, the living area is larger than the lot size. The latter indicates that the living area is spread across several floors.
5. To be considered urban sprawl, a DB must meet the following conditions: (1) the block was classified as rural in 2016 but as a population centre in 2021; (2) the most common properties built from 2016 to 2021 were single-detached houses; and (3) its residential property stock increased by at least 10 new residential properties from 2016 to 2021, representing a minimum of 10% of total stock. Statistics Canada designates DBs as population centres when their population density is at least 400 people per square kilometre and when the area formed by contiguous DBs passing this minimum threshold contains at least 1,000 people. Methodological details are available in the census definition of population centre.
6. Map 1 uses the 2021 Census geographic boundaries and is mapped at the DB level.

Map 1
Population centres, urban sprawl from 2016 to 2021, and rural areas of Toronto census metropolitan area



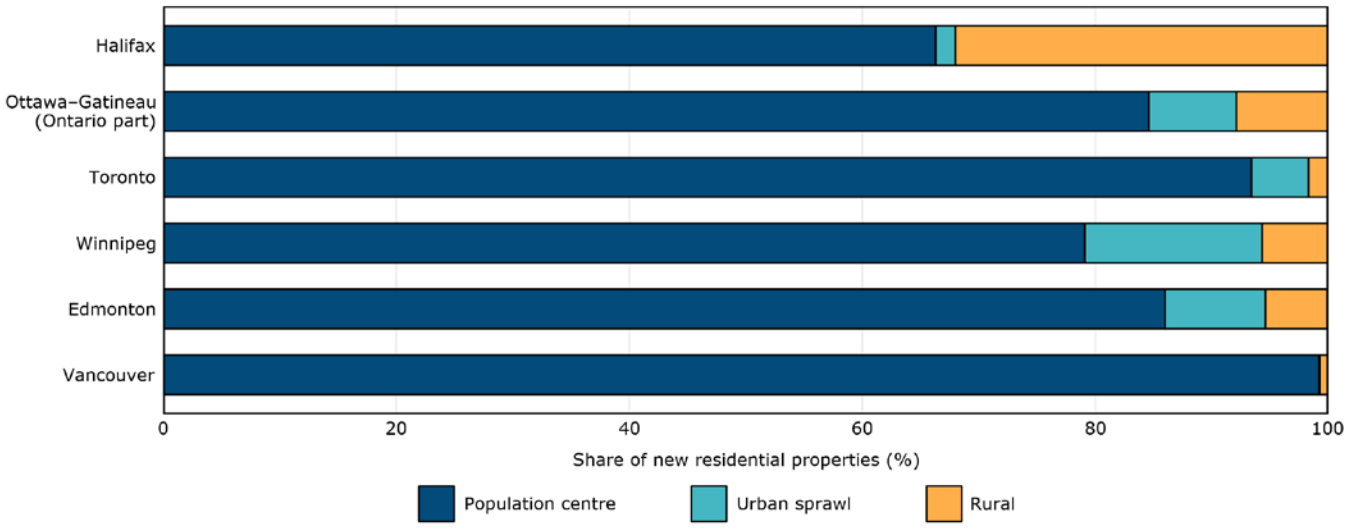
Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

Despite meeting the density requirement for a population centre, urban sprawl areas generally have lower proximity to important amenities, such as places of employment and public transit, than other population centres in their respective CMAs. In Toronto, the average proximity index to employment in population centres was 5.3 times that of sprawl areas. Similarly, the average proximity index to public transit was 18.3 times that of sprawl areas.[7] Lower proximity to amenities, especially to public transit, generally implies higher vehicular emissions (World Bank, 2021), as more frequent use of personal vehicles and longer trips are usually required for routine tasks.

Chart 3 displays the proportions of new residential property stock built from 2016 to 2021 between population centres, urban sprawl areas and rural areas across the six CMAs. Proportionally, the CMA of Winnipeg experienced the most sprawl, as measured by the proportion of residential construction in urban sprawl areas from 2016 to 2021 (15.2%, or 1,880 properties). In absolute terms, Toronto witnessed the most sprawl, with 6,640 new residential properties in such locations, representing 4.9% of new development in the CMA. However, in all the CMAs analyzed, most of the new housing construction still occurred in population centres, ranging from 66.4% in Halifax to 99.2% in Vancouver.

New housing development also occurred in rural areas, usually at a smaller or similar scale compared with urban sprawl areas in general (Chart 3). Halifax was a notable exception, where almost one-third (32.0%) of its new residential properties were in rural areas. Among these new developments, a significant proportion (91.7%) were single-detached houses, featuring a median lot size of 1.6 acres. While scattered new properties featuring large lots in rural areas signify low-density development, a notable share of such new housing may indicate the first phase of urban sprawl.

Chart 3
Winnipeg is the most sprawling census metropolitan area analyzed



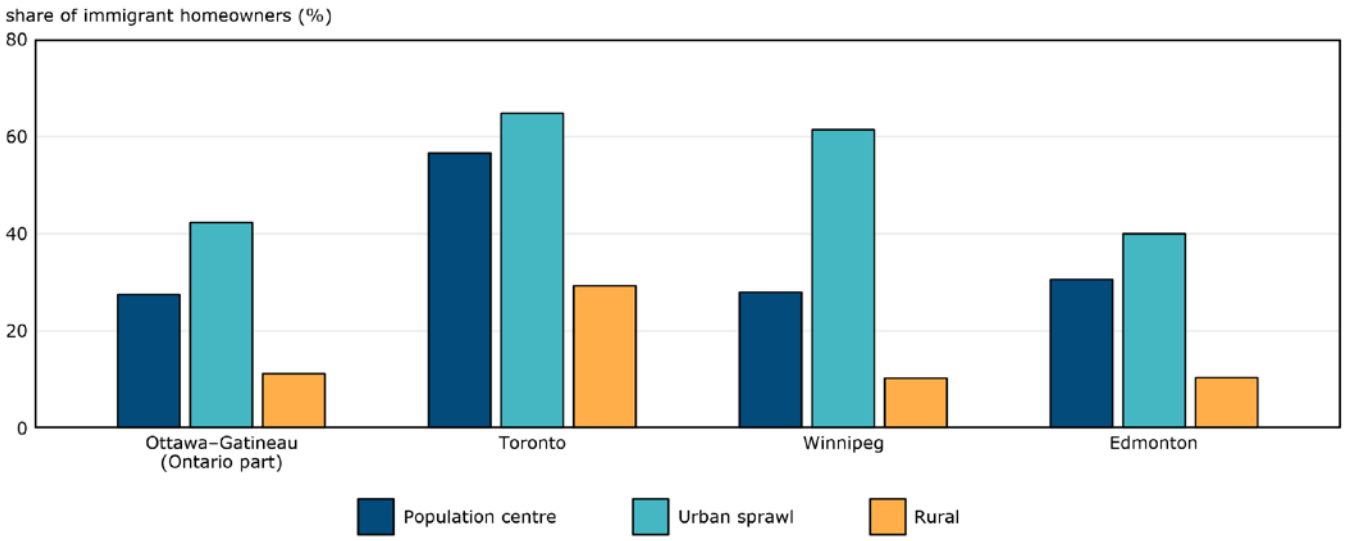
Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

7. The average proximity indices were calculated using the Proximity measures database, 2021.

Owner-occupants in urban sprawl areas are more likely to be younger adults, in a couple and immigrants

In the four CMAs that have experienced notable urban sprawl from 2016 to 2021, namely Ottawa–Gatineau (Ontario part), Toronto, Winnipeg and Edmonton, homeowners who occupied their properties in the sprawl areas tended to be younger. Ranging from a median age of 38 in Winnipeg to 45 in Ottawa–Gatineau (Ontario part), homeowners were younger compared with the rest of the respective CMAs, where the median age was in the 50s. Homeowners in urban sprawl areas were also more likely to be married or in a common-law relationship (approximately 9 in 10), compared with homeowners in the population centres of the respective CMAs, where around 8 in 10 were in a couple. Additionally, urban sprawl areas featured a larger proportion of immigrant owner-occupants than population centres and rural areas in the same CMAs (Chart 4).

Chart 4
Nearly two-thirds of owner-occupants in Toronto's sprawl areas are immigrants



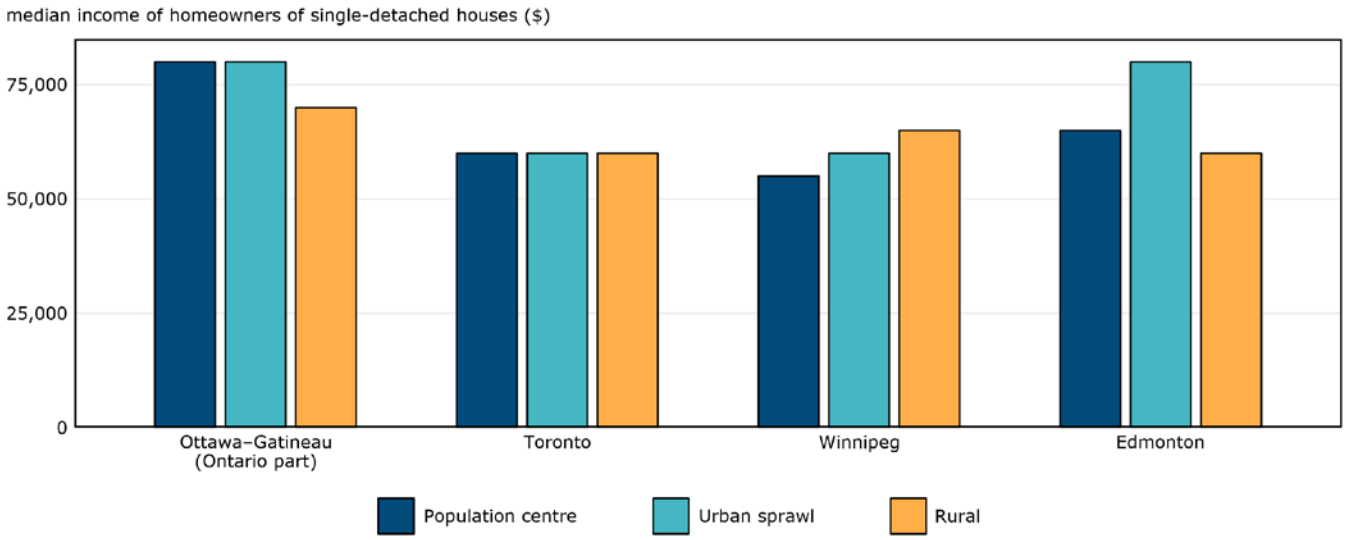
Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

Among homeowners who occupied a single-detached house in Winnipeg and Edmonton, those who lived in urban sprawl areas had a higher median income than those who lived in population centres (Chart 5).[8] In Ottawa–Gatineau (Ontario part) and Toronto, however, median incomes were similar in the sprawl areas and the population centres.

Owner-occupants of single-detached houses were more likely to be multiple-property owners in sprawl areas (19.7%) of Ottawa–Gatineau (Ontario part) than in population centres (16.5%) or rural areas (17.4%). By contrast, a higher proportion of homeowners held several residential properties in rural areas than in sprawl communities in the other CMAs.

8. The value of properties—and therefore the income of their owners—may vary by property type (e.g., row houses and condominium apartments can be more affordable than single-detached houses). Thus, the universe of homeowners for this part of the analysis is limited to homeowners who occupied a single-detached house.

Chart 5
No difference in the median income of owner-occupants of single-detached houses in sprawl areas and population centres of Ottawa-Gatineau (Ontario part) and Toronto



Source: Statistics Canada, Canadian Housing Statistics Program (CHSP).

Note to readers

The Canadian Housing Statistics Program (CHSP) is an innovative data project that leverages existing data sources and transforms them into new and timely indicators on Canadian housing.

The data in this study are compiled from the CHSP for the 2021 reference year. These data reflect the properties registered on the property assessment roll of each province or territory for that year, and there may be delays in registering new properties. Complete information is available about the reference years of the property stock, by province and territory.

Determining the use of a residential property by its owner is less reliable in Alberta. Consequently, the results on the characteristics of owner-occupiers in Edmonton are provided for comparison purposes and should be interpreted with caution.

Geographical boundaries

The analysis is based on the geographical boundaries from the 2016 Standard Geographical Classification, and the identification of sprawl boundaries is based on the 2021 Standard Geographical Classification.

The CHSP database does not contain information about residential properties on reserves.

Definitions

For the purposes of this study, **urban sprawl** is defined as the expansion of a population centre into adjacent rural dissemination blocks (DBs), where the most common type of new residential property stock in the recently urbanized area is single-detached houses and where a DB's residential property stock has increased by at least 10 new residential properties, representing a minimum of 10% of total stock in the DB. A rural-to-population centre transition is observed when a DB classified as rural according to the Geographic Attribute File of the 2016 Census of Population was assigned as a population centre in the Geographic Attribute File of the 2021 Census of Population.

Residential property stock refers to all residential properties in a given geographic region, excluding vacant land. A residential property may consist of one or multiple dwellings. Single-detached houses, for example, usually feature only one dwelling, while properties with multiple residential units can include many dwellings.

Living area refers to the residential living space within a structure. For residential structures that have a basement, the finished basement area is included in the total living area, while the unfinished basement area is not included.

In this release, **land area** refers to the surface area of the property lot of a single-detached house.

Floor–space ratio is defined here as the ratio between the living area and the land area of a residential property.

A **population centre** has a population of at least 1,000 and a population density of 400 people or more per square kilometre, based on population counts from the Census of Population. All areas outside population centres are classified as **rural areas**.

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