

HOUSING SHORTAGES AND DOUBLED UP HOUSEHOLDS

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SUMMARY

Housing shortages produce higher rents and prices. They also affect people's demographic behaviours, primarily by pushing people toward doubling up together. Tracking doubled up households is useful in better understanding housing shortages, as well as benchmarking how much more housing is needed to fix them. The malleability of households, and their responsiveness to housing shortages, has important implications for planning. The number of households cannot be assumed as fixed when assessing current needs or planning for the future. Increasing livability by reducing doubling up deserves more attention as a planning goal.

SOMMAIRE

La pénurie de logements entraîne une hausse des loyers et des prix. Elles affectent également les comportements démographiques des gens, principalement en les poussant à doubler leur logement. Le suivi des ménages doublés est utile pour mieux comprendre les pénuries de logements, ainsi que pour évaluer le nombre de logements supplémentaires nécessaires pour y remédier. La malléabilité des ménages et leur réactivité à la pénurie ont des implications importantes pour l'urbanisme. Le nombre de ménages ne peut être considéré comme fixe lorsqu'il s'agit d'évaluer les besoins actuels ou de planifier l'avenir. L'amélioration de l'habitabilité par la réduction du double emploi mérite une plus grande attention en tant qu'objectif de l'urbanisme.



THE DEMOGRAPHY OF HOUSING SHORTAGE

Housing shortages tie together rising rents with the doubling up of households. We examine these ties in the context of the Canada Mortgage and Housing Corporation's (CMHC) most recent supply gap estimate, which suggests a shortage of 3.5 million dwelling units needed to restore affordability to early 2000s levels. This number is above and beyond what CMHC projected would get built under current planning and development processes. The economic models behind gap estimates come with considerable uncertainty, but they direct attention to Canada's accumulated housing shortfall. Demographic models of the shortfall complement these estimates and help illustrate the underlying mechanisms by which they work.

Figure 1 demonstrates how shortages impact markets directly in the tight relationship between vacancy rates and rents. When vacancy rates are high, rents come down, and vice-versa.

In other words, market shortages produce rising rents, as landlords and prospective tenants set bids and expectations in response to conditions. Can we see any similar relationship in the demography of housing shortage?

Demography encourages us to consider more broadly how people can respond to local housing shortages. Simply, people can:

- go without housing;
- move (or stay) away from a community; or
- double up in a dwelling unit.

Research indicates that homelessness is strongly related to local rents and housing shortages, but estimates of the size of the homeless population are both methodologically challenging to obtain and small relative to the scale of the estimated supply gap.¹

Migration responses to housing shortages are similarly difficult to quantify. Inter-regional migration is generally more responsive to labour market conditions than to housing.

What about doubling up? Doubling up occurs where people live together who we might expect to split into separate households if a free dwelling were available to them. Certain 'minimal household units' would likely stay together anyway even if they were offered a free dwelling, including couples along with parents and their dependent children.² But we could

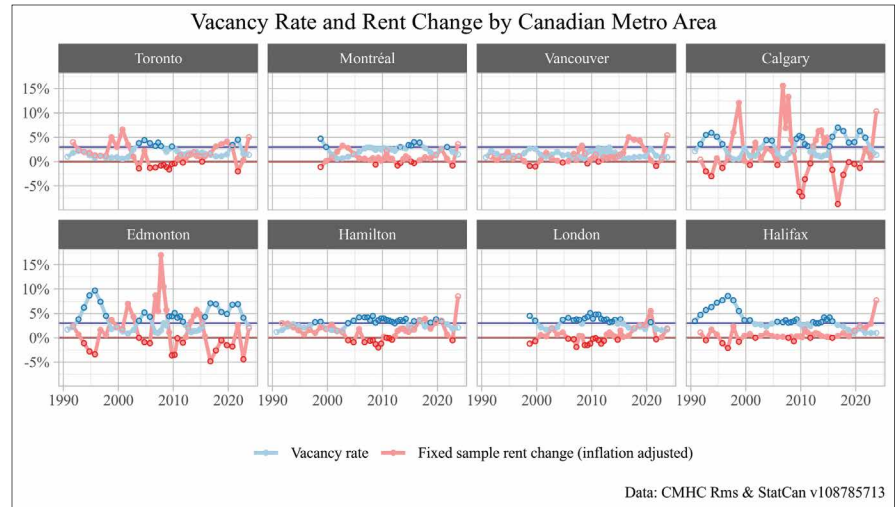


Figure 1: Vacancy rates above 3% tend to correspond to rent declines, while those below 3% correspond to rent increases.

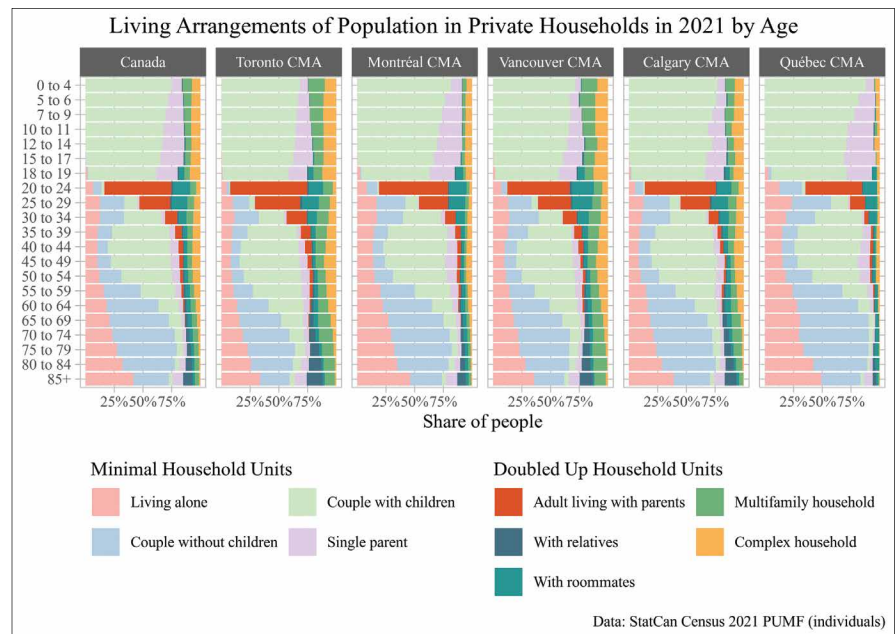


Figure 2: The share of the population not in minimal household units, and their living arrangements varying by age and across geographies. Statistics Canada's PUMF data does not easily identify which adults have adult children living with them, so we treat parents with adult children at home as living in Minimal Household Units, but not their children.

expect other households to split apart, and define these as 'doubled up' households. Figure 2 gives an overview over the share of the population that is doubled up in select Census Metropolitan Areas (CMA), broken down by age and living arrangements.

We define 'doubling up' conservatively, suggesting a desire for independence starting at age 20. Young adults just past this age are the most likely to be doubled up, especially living with parents or living

with roommates.³ As people age into the 25-29 range, there is a dramatic drop off in doubling up, with a further drop in ages 30-34. As living with parents and roommates declines, other forms of doubling up rise, including multifamily households, living with other relatives, and more complex households where families share housing with other non-family members.

While age-related patterns look similar, the overall levels of doubling up vary

considerably between CMAs. In particular, the Toronto and Vancouver CMAs stand out with high levels of doubling up across all ages, while the Québec City CMA exhibits comparatively low levels. What explains the different rates of doubling up across metropolitan areas, and how much housing is needed to eliminate doubling up?

DOUBLING UP AND THE HOUSING SHORTAGE

Whereas Figure 2 focuses on how people are doubling up to cope with housing pressures, we can turn this around and ask how much housing is needed to allow every minimal household unit to form their own household. This provides a rough demographic benchmark of our housing shortage. All we need are population figures by age and partnership status compared to current (occupied) dwelling units. Figure 3 shows the resulting estimated housing shortfall, which we define as the minimum number of dwellings needed to avoid any doubling up.⁴ In addition to relying on the 2021 Census, we show data for 2011 and 2016 as well, both as a check against any effects peculiar to the COVID-19 pandemic captured in the 2021 Census and to help assess recent trends.

At the low end, the Québec City CMA gives an indication that even the cheapest metropolitan areas still have doubled up households. Some of this doubling up is probably voluntary and could be expected to continue even if more housing were available to everyone. Towards the top of the figure, doubling up is likely increasingly involuntary, and more households would likely split apart if more housing were added. Overall, the minimum number of dwellings to avoid any doubling up provides a useful benchmark for understanding current housing shortages.⁵

The regions with the highest housing shortfall are correspondingly the regions with the highest rents. Housing shortages lead to low vacancy rates and the bidding up of prices and rents as shown in Figure 1. The highest bids are often set by a combination of the richest and most desperate people forming new households. Others remain doubled up. To understand the underlying mechanisms better, we turn to a more detailed look at the relationship between rents and housing shortages, and the demographic response to undoing housing shortages.

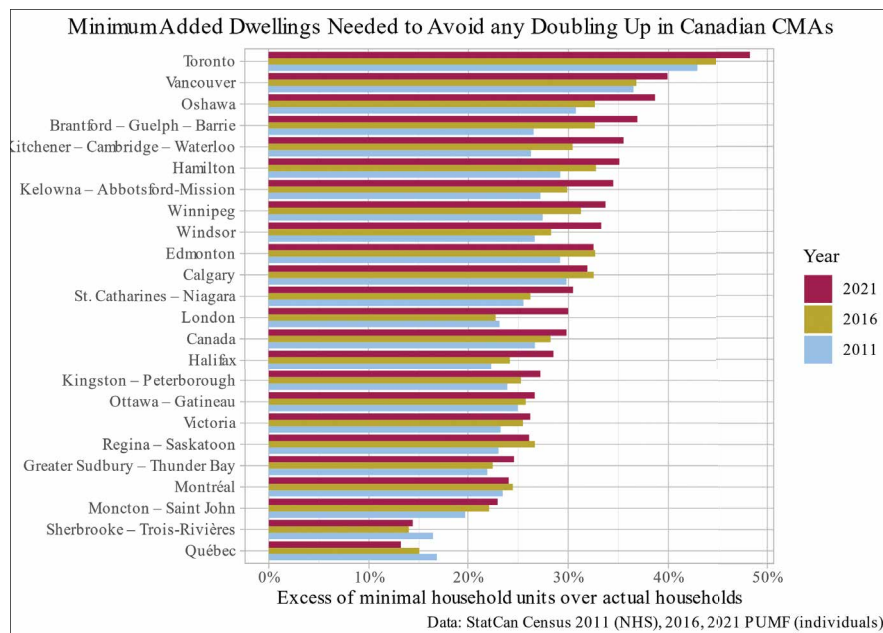


Figure 3: The minimum number of dwelling units needed to avoid any doubling up has increased between censuses in most census metropolitan areas. The Québec City CMA is a notable exception in managing to translate increasing real incomes into improving housing outcomes.

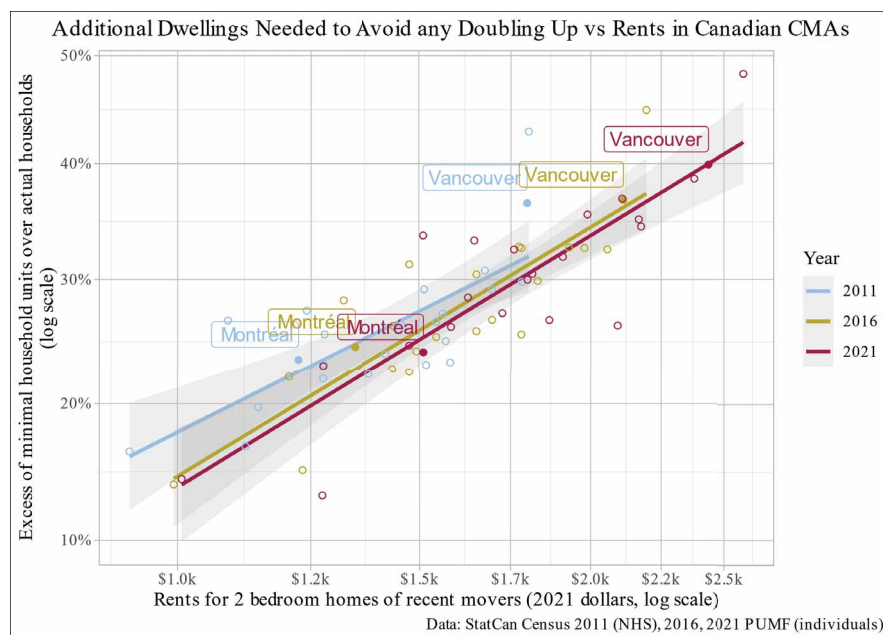


Figure 4: The relationship between rents and excess minimal household units over actual households can provide a benchmark for latent demographic housing demand across CMAs, excluding migration effects. Montréal and Vancouver are highlighted as large CMAs close to the regression line.

SLIDING DOWN THE DEMAND CURVE

The CMHC housing shortfall model is based on how much housing supply would have to be added to bring down prices.⁶ Supply curves and demand curves intersect at price levels, and the CMHC backtracks from the price levels they want to achieve to the supply needed to

get there. Our housing shortfall model is based on the demographics of doubled up households, but it is effectively operating through the same processes.

Adding new housing temporarily raises vacancy rates and puts downward pressure on rents and prices, allowing people to split into new households, filling those vacancies.

We can quantify the net effect by looking at the relationship between rents and excess minimal household units over households that actually formed. Figure 4 suggests that a 10% decrease in rents would lead to a 2.5% decrease in the excess of minimal household units over actual households. Here, we use turnover rents of 2-bedroom units (moved into during the year preceding the census), as a proxy for the housing available for household members that want to split off.

The relationship is strong, but not perfect. This points to other factors that affect the relationship. Next to income, variation in cultural acceptance of doubling up also matters and explains some of the variance, but accounting for these factors does not materially change the relationship that we highlight here, as we show in greater detail elsewhere.⁷

To make the implications of the relationship in Figure 4 more concrete, if Vancouver had Montréal's rents, the number of excess minimal household units would be 15 percentage points lower, or equivalently Vancouver would have 12% more households or 139,000 in absolute numbers. But Vancouver does not have 12% additional dwellings to better house these doubled up households, explaining why Vancouver does not have Montréal rents.

Adding further context, Vancouver needs about six years' worth of housing construction⁸ in order to enable residents to reduce doubling up to match Montréal's levels, all while keeping the population constant. In reality, Canada's population is growing, and has been growing strong since the 2021 Census, so on top of making up for the shortfall, Vancouver also has to build housing to keep up with that growth. If construction in the region ramps up to allow households to form more freely and rents to come down, Vancouver will likely see fewer people deciding to leave the region and more people arriving, and this additional population growth will require even more housing.⁹

In summary, Figure 4 gives a visual representation of the demographic demand curve for housing the current population. People respond to scarcity by bidding up rents and doubling up more. Alleviating shortages eases rent pressures, enabling those doubled up to form independent households.



DOUBLED UP HOUSEHOLDS AND BAD MEASUREMENTS

Like high rents, the prevalence of people doubling up can be treated as evidence for housing shortages. But there is another lesson here. The concept of minimal household units offers an important reminder that the households we observe are often responses to scarcity. Households are malleable rather than fixed, with members' decisions to live together responding to outside opportunities for achieving independence.

Where it is not taken seriously, the malleability of households can be a problem

for measurement of housing shortages. Perhaps the most obvious example emerges where people attempt to measure housing shortages as the difference between existing households and dwellings. So long as there are more dwellings than households, there can't be a shortage, right? This is wrong both by definition (since households are simply the occupants of a dwelling, the number of households can never exceed the number of dwellings) and by measurement (correctly counting dwellings and households is difficult and vacancies tend to be quite limited in time).

The malleability of households offers a further point: oftentimes members of a single household are frustrated by their inability to achieve independent living. Data about doubling up may act as a measure of this frustration, and can explain more about housing shortages than counts of often-illusory 'empty' dwellings.

A less obvious set of problems emerges for other indicators of housing shortage. The Core Housing Need¹⁰ measure also fixes current households in place, ignoring that some members may not want to double up. This can have perverse effects, where household incomes combine together the wages of individual members and seem to indicate affordability. When more housing becomes available, doubled up households may split, resulting in reduced household incomes – paradoxically reducing assessments of affordability – even where housing outcomes overall have improved by enabling independence. Similarly, applying Core Housing Need's bedroom occupancy standards to fixed households can result in overestimating the need for larger dwellings while underestimating the need for more small dwellings enabling independence.

Despite the problems with the Core Housing Need measure, Figure 5 shows

that, like rent, it is positively correlated with measures of doubling up.

Relative to Core Housing Need, doubling up effectively operates as a different, but complementary measure of the effects of housing shortage. In addition to working with minimal household units, we can also explore other ways of grouping people, including age-expected households or families and unattached individuals to help identify and track housing shortages. These can be compared to household-based metrics to show where assumptions might be leading planners and researchers astray.

CONCLUSION

Prices and rents operate as useful measures of housing shortage and these drive the CMHC's model of Canada's housing shortfall. Household demography can also provide important insights to planners and researchers and clarify shortage mechanisms. The key takeaway is that households are malleable and doubling up is the main demographic mechanism by which people respond to housing shortages. The prevalence of doubling up offers a way to benchmark the size of housing shortages.

Just as housing shortages put upward pressure on rents and push people toward doubling up, adding more housing puts

downward pressure on rents and allows doubled up households to split and achieve independence. Estimating the size of the housing shortage and quantifying the effect reducing shortages has on doubling up and rents can set realistic expectations about needed supply, and help guard against supply skepticism.¹²

Household malleability creates challenges for planning. Planners should not imagine current households as fixed. Instead, planners need to look within household structures to find who might be ready to form their own household. Just as household numbers depend upon the number of dwellings available to people, household incomes and other key characteristics can also shift as people redistribute themselves across what housing they can find. Housing needs cannot be fully assessed based only on the households that have managed to form during housing shortages. A remaining complication is that doubling up measures operate at the regional level and do not necessarily make sense when looking at contingent municipalities in isolation. People redistribute themselves over both dwellings and nearby municipalities in response to availability of housing. Nevertheless, rents and prices can still inform where in the region demand is highest.

Household shortages do not affect everyone equally. Involuntarily doubling up can create stress on a day-to-day basis, and this stress is often invisible to planners even as it erodes livability for many people. Focusing solely on affordability gains misses

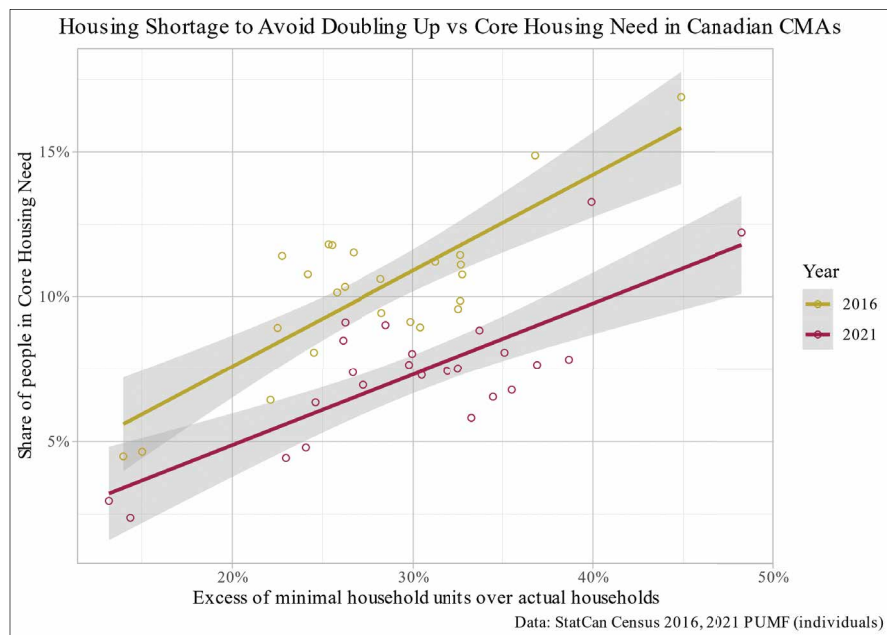


Figure 5: The relationship between Core Housing Need and housing shortage estimates is reflective of the heterogeneity in how people trade off privacy against high shelter cost pay-ments. The correlation persists in 2016 and 2021 and highlights the pronounced temporary drop in Core Housing Need associated with Canada Emergency Response Benefit (CERB) payments during the COVID-19 pandemic.¹¹



an important dimension of the value of adding housing: allowing households to split up and achieve their preferred living arrangements. Accounting for doubling up can help planners avoid interpreting the existing household structure as the preferred way of living.¹³

ENDNOTES

- ¹ Kneebone, Ronald D, and Margarita Wilkins. 2021. "Local Conditions and the Prevalence of Homelessness in Canada." *The School of Public Policy Publications* 14.
- ² Ermisch, John F, and Elizabeth Overton. 1985. "Minimal Household Units: A New Approach to the Analysis of Household Formation." *Population Studies* 39 (1): 33–54.
- ³ We regard 18- to 19-year-olds living with parents as dependent children and adults 20 years and over as independent, though we recognize young adults in their early twenties may still be somewhat dependent on their parents, especially if they are still in school. Moreover, the census codes post-secondary students generally as living with parents if they return home during the semester break, which inflates the estimate of the number of young adults living with parents in the 20- to 24-year-old age bracket.
- ⁴ Here, we discounted post-K12 students aged 20 to 24 living with parents by a factor 1/2 as a rough accounting for census re-coding of some students as

living with parents and not counting dwellings entirely occupied by such re-coded students as households.

- ⁵ To get from current housing shortfall to forecasting the projected housing shortfall at some point in the future requires further demographic modelling, laying out assumptions about deaths, births, and future migration (which is endogenous to housing supply). An added caveat to the purely demographic approach outlined here is that economic drivers of housing demand are also important.
- ⁶ The CMHC model recognizes the added complexities of economic factors like incomes, interest rates, and property taxes and also translates prices into broader affordability levels.
- ⁷ Lauster, Nathanael, and Jens von Bergmann. 2025. "The New Rules: Housing Shortage as an Explanation for Family and Household Change Across Large Metro Areas in Canada, 1981-2021." *Forthcoming*.
- ⁸ At the average pace for the Vancouver CMA from the past 5 years.
- ⁹ Although inter-regional migration effects are generally understood to be slower than the household formation response.
- ¹⁰ Per CMHC, a household is considered to be in core housing need if it is below one or more of the adequacy, suitability, and affordability standards; and, the household would have to spend 30% of more of its before-tax household income to access local housing that meets all

three standards www.cmhc-schl.gc.ca/professionals/housing-markets-data-and-research/housing-research/core-housing-need/identifying-core-housing-need.

- ¹¹ Statistics Canada. 2011, 2016, 2021. "Census Public Use Microdata File (PUMF)." www150.statcan.gc.ca/n1/pub/98m0001x.
- ¹² Been, Vicki, Ingrid Gould Ellen, and Katherine M. O'Regan. 2023. "Supply Skepticism Revisited." *SSRN Electronic Journal*.
- ¹³ Replication code underlying the analysis and graphs is available at github.com/mountainMath/housing_shortages_and_doubled_up_households.

Jens von Bergmann is the founder and president of MountainMath, a Vancouver-based data analytics firm that specializes in transparent and reproducible analysis of Canadian data around the intersection of demographics, housing and transportation. **Nathanael Lauster** is Associate Professor of Sociology at the University of British Columbia and author of *The Death and Life of the Single-Family House: Lessons from Vancouver on Building a Livable City*, in addition to numerous other articles, mostly concerning housing, demography, and urban policy. ■

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