



Projections: Population, Households, & Dwellings Methodology

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1 OVERVIEW

Below is a description of the methodology used to produce population, household, and housing projections and to estimate current and future housing demand. Projections are anchored to the 2021 Census as the base year, adjust outwards to 2025 as the current, and extend through 2050, with demand reported at 5-year intervals.

The model produces estimates across 11 analytical domains:

1. demographic projections
2. household and dwelling projections
3. housing shortage estimates
4. future demand by dwelling size (number of bedrooms)
5. future demand by dwelling type
6. future demand by family structure
7. future demand by income category
8. future demand by household size
9. future demand by price model
10. future senior housing demand (**see separate methodology**)
11. estimates of latent demand from surrounding communities (**see separate methodology**)

2 POPULATION PROJECTIONS

Population projections are drawn directly from Statistics Canada's official population projections produced at the census subdivision (CSD) and census division (CD) level.¹ Where Statistics Canada publishes projections directly for the subject CSD, those figures are used without modification. Where CSD-level projections are unavailable (communities below 800 persons), a constant share approach is applied: the CSD's historical share of CD population is calculated from historical census counts, and that share is applied to the projected CD population for each benchmark year.

Projections are disaggregated by five-year age group (0 to 4 through 85+ year olds) for the period of 2021 to 2050. The model includes all possible scenarios, and thus provides a range of possible outcomes within the final report; however, detailed projection work uses only one scenario. The chosen scenario is the one that is closest but below the median of the 8 scenarios, reflecting a balance between lower- and higher-growth assumptions. Note that the “middle” scenario may be different depending on the community.

Example: Constant Share projection

Where Statistics Canada does not publish CSD-level projections directly, the CSD's share of its parent CD is estimated from two Census counts and held constant across the projection horizon.

¹ Statistics Canada. Table 17-10-0162-01 Projected population for census divisions and census subdivisions, 2021 boundaries, by projection scenario, age and gender, as of July 1. DOI: <https://doi.org/10.25318/1710016201-eng>

Variable	Population
CD population — 2021 Census	10,000
CSD population — 2021 Census	500
CSD share of CD (2021)	5.0%

Statistics Canada projects the CD population at 12,000 in 2025 under scenario M5. Applying the constant share:

$$\text{CSD 2025} = 12,000 \times 0.05 = 600$$

This procedure is performed for each five-year age cohort, after which they are all summed together to calculate the total CSD population. This is also done for each year in the projection horizon, using the same constant relationship from 2021 throughout.

3 HOUSEHOLD & DWELLING PROJECTIONS

3.1 Household Projections

Household projections are derived by applying age-specific headship rates to the projected population. A headship rate represents the probability that a person in a given age group is the primary maintainer of a private household. Rates are calculated by dividing the number of household maintainers of a particular age cohort by the number of total persons in the same age cohort (for example: 100 25-to-34-year old led households divided by 200 25-to-34-year old persons is a headship of 0.50).

Total projected households for each benchmark year are calculated by multiplying the projected population in each age cohort by the corresponding headship rate and summing across all cohorts. This approach holds the age-specific propensity to maintain a household constant over the projection horizon, reflecting structural household formation behaviour rather than current local conditions. The model calculates headship rates using 2016 census data, representing household formation during generally less frantic housing markets (note: many communities were already experiencing notable housing hardship before 2016, like Vancouver or Toronto).

Example: Household projection (select age groups, 2035)

Headship rates are drawn from the 2021 PUMF. Projected population by age group is drawn from the demographic projection described in Section 1. The table below shows three illustrative age cohorts; all nine are used in the full calculation.

Age group	Projected pop.	Headship rate	Projected HH
35–44	2,000	0.60	1,200
45–54	3,000	0.65	1,950
55–64	2,500	0.60	1,500
...	...	...	...
Total (select cohorts)	7,500	—	4,650

Projected HH = Projected population × headship rate
e.g., 35–44 cohort: 2,000 × 0.60 = 1,200 households

3.2 Dwelling Projections

Total dwelling demand is derived from projected household counts by applying a ratio of total dwellings to total dwellings occupied by a usual resident (as opposed to temporary residents or dwellings occupied only part of the year), using 2021 Census data for the community. Multiplying the household count by this ratio produces the total number of dwellings needed to house the projected population at the same occupancy patterns observed in 2021.

Example: Usual/total resident ratio and dwelling projection

The ratio is calculated from 2021 Census counts for the community:

Variable	Example of ratio
Total occupied private dwellings (2021 Census)	11,000
Dwellings occupied by usual residents (2021 Census)	10,000
Total / usual ratio (11,000 / 10,000)	1.10

This ratio is applied to projected household counts to estimate required dwelling stock:

Variable	Example of dwellings
Estimated households, 2025	11,000
Estimated dwellings, 2025 (11,000 × 1.10)	12,100
Projected households, 2035	13,000
Projected dwellings, 2035 (13,000 × 1.10)	14,300

4 HOUSING SHORTAGE

The housing shortage estimate combines four components: suppressed household formation, vacancy shortfall, unhoused population, and households in extreme core housing need. The approach takes inspiration from British Columbia's Housing Needs Report regulations, which prescribe calculations for several components of housing demand.²

These following components represent distinct dimensions of unmet housing need as of the 2025 base period, net of any new supply completed since the 2021 Census.

4.1 Suppressed Household Formation

Suppressed household formation occurs when households that would be expected to form under normal market conditions are prevented from doing so, typically by a shortage of available or affordable housing. Suppression is estimated by comparing actual 2021 household counts to the

² BC Ministry of Housing. (2024, June). [Guidelines for Housing Needs Reports – HNR Method Technical Guidance](#).

number of households that would be expected if the subject community had headship rates matching those from 2016.

Where 2021 headship rates fall below the 2016 benchmark for a given age group, the difference in household counts is attributed to suppression. Age groups with headship rates above the benchmark are not used to offset suppression in other groups; only positive deviations are counted (i.e., where 2021 expected totals are higher than 2021 actual totals).

This approach is consistent with the methodology used in the federal Housing Infrastructure and Communities Canada (HICC) Housing Needs Assessment template and has been applied by the Housing Assessment Resource Tools (HART) initiative and other organizations working on housing needs estimation in Canada.

Example: Suppressed household formation by age group (2021)

Firstly, a headship rate for 2016 is calculated:

Age group	Example population	Example households	Resulting headship rate
15–24	2,000	800	0.400
25–34	3,000	1,500	0.500
35–44	4,000	2,500	0.625
45–54	3,500	2,500	0.714
....	...	...	...

Then, for each age cohort, actual 2021 household totals are compared to expected 2021 household totals (i.e., if 2021 population age groups were multiplied by 2016 headship rates). For instance, if there are 2,250 people between 15 and 24 years old, and the 2016 headship for said age group is 0.400, then the expected households would be 900 households.

Positive deviations (expected above actual) are counted as being suppressed households; negative deviations are set to zero.

Age group	2021 actual HHs	2021 expected HHs	Suppressed HHs (expected - actual)
15–24	800	900	100
25–34	1,200	1,350	150
35–44	1,500	1,400	0 (negative not counted)
45–54	1,400	1,350	0
....	...	...	...
Total suppressed HHs			250

Suppressed HH (age group) = max(0, expected HHs – actual HHs)
e.g., 25–34 cohort: $(1,350 - 1,200) = 150$ households

4.2 Demand Since Census

Since we are interested in a 2025 shortage, understanding the potential change in households since 2021 and 2025 is important. This is simply done by subtracting estimated household demand in 2025 by actual households in 2021.

4.3 Vacancy Shortfall

A vacancy rate of 3.0% is used as the benchmark for a healthy rental market. The local vacancy rate is sourced from the CMHC Rental Market Survey for the subject community. Where CMHC does not publish a local vacancy rate, the most recent provincial rate is used as a proxy.

The vacancy shortfall is the number of additional rental units required to bring the local vacancy rate to the 3.0% target. It is calculated by applying the gap between the target rate and the observed local rate to the estimated number of renter households in 2025.

Example: Vacancy Shortfall Calculation

A local vacancy rate is sourced from the CMHC Rental Market Survey. The required rental stock at each vacancy rate is derived by expressing renter households as a share of total rental units (occupied + vacant).

Variable	Value
Estimated renter households, 2025	4,000
Example vacancy rate	2.0%
Target vacancy rate	3.0%
Required rental stock at 3.0% ($4,000 \div 0.970$)	4,124 units
Implied rental stock at 2.0% ($4,000 \div 0.98$)	4,081 units
Vacancy shortfall ($4,124 - 4,081$)	43 units

The vacancy shortfall is modest in this case because the gap between the observed and target rates is narrow. A larger gap, or a community with a higher renter household count, would produce a more substantial shortfall.

4.4 Unhoused Population

Individuals experiencing homelessness represent households not captured in standard dwelling counts. Where local point-in-time count data or administrative records are available, those figures are incorporated into the shortage estimate. Where no local data exist, the inputted value defaults to zero and noted as a likely undercount of true need. That said, users can input any estimates they deem appropriate.

4.5 Extreme Core Housing Need

Extreme Core Housing Need (ECHN) captures households living in dwellings that fail to meet minimum standards of suitability, adequacy, or affordability to a severe degree. The ECHN rate is drawn from Statistics Canada data at the CSD, CD, and provincial levels, with the most locally specific rate applied. Where local data is not available, an average of the CD and province is taken. The share of ECHN households is sourced from the 2021 Census, and then applied to 2025 household estimates.

Note that, unlike the BC methodology, ECHN households are not added to the total shortage. These households are technically housed, but not appropriately. Therefore, this data is used to estimate the share of future demand allocated to non-market housing, discussed later.

Example: ECHN estimate for 2025

Variable	Value
CSD ECHN rate (Statistics Canada)	5.0%
Estimated renter households, 2025	4,000
ECHN households ($4,000 \times 0.05$), 2025	800

4.6 Shortage Summary

The total housing shortage is the sum of the components above (except the ECHN value). This figure is then converted to a total dwelling count using the total/usual dwelling ratio described in Section 3.2.

Lastly, estimated dwelling units constructed since the 2021 Census are subtracted from the estimated total dwelling shortage to come to a final 2025 estimate. Units constructed is estimated using annual building permits from Statistics Canada Table 46-10-0087.

Example: Shortage summary

Component	Value
Suppressed household formation (2021)	250
Vacancy shortfall (2025)	43
Unhoused (2025)	0
Demand since 2021 (example)	200
Extreme Core Housing Need (2025)	not included
Subtotal shortage — unadjusted (households)	493
Multiplied by total / usual ratio	x 1.1
Subtotal shortage — adjusted (dwellings)	542
<u>Less:</u> units built since 2021 (example – 4 yrs x average permit total))	– 150
Total shortage — adjusted (dwellings)	392

5 FUTURE DEMAND BY HOUSING CHARACTERISTIC

Future demand is distributed across five housing characteristics: dwelling size (i.e., number of bedrooms) requirement, dwelling type, family structure, income category, and household size. Each characteristic is modelled using a common matrix-based method applied at each benchmark year. Note that dwelling size is also used to calculate future tenure demand.

The general method proceeds in three steps:

1. a distribution of housing characteristics by maintainer age group is derived from Canada-wide 2016 and 2021 Census Public Use Micro-Data File (PUMF) outputs;
2. that distribution is applied to the projected number of households in each age group to generate raw demand estimates; and
3. the raw estimates are adjusted to align with observed 2021 Census counts for the community, anchoring the projections to local conditions. This procedure ensures that the projected distribution of housing characteristics reflects both the age structure of future households and the baseline composition of the local housing stock.

General Matrix Method

Let R_{ij} denote the PUMF-derived rate for age group i and characteristic category j . Let $H_i(t)$ denote projected households in age group i at benchmark year t . Raw demand for category j at year t is:

$$D_j(t) = \sum_i [R_{ij} \times H_i(t)]$$

The rate of change calculated by characteristic over the projection period is then used against the actual 2021 totals for that characteristic to anchor results on existing conditions. For instance, if owner occupied one-bedrooms are projected to increase 5% over a period based on the general matrix method, and the 2021 owned one-bedroom total is 100 units, then said unit demand will grow by 5 over the same period.

5.1 Bedroom Requirements

Bedroom demand is estimated using two parallel distributions. The first is based on the National Occupancy Standard (NOS), which defines the appropriate number of bedrooms for a household based on its size and composition. NOS-based bedroom requirements are derived from Canada-wide 2021 Census PUMF data, disaggregated by Household Family Type, Household Size, and Maintainer Age groups. Based on NOS definitions regarding bedrooms per person given family type), these three variables are converted into required number of bedrooms by maintainer age group. Note that the NOS method is further filtered to reflect households living in core housing need and that the results are used specifically for determining the distribution of bedroom need for non-market housing calculations.

The second distribution is derived from 2021 Census PUMF³ records for households that moved within the last five years (i.e., anything but a non-mover, as it relates to the five-year mobility variable from the Census), reflecting revealed preferences in residential construction. This distribution captures the bedroom sizes households are actually choosing in the current market, which may differ from strict NOS requirements.

Both distributions are calibrated to 2021 Census bedroom counts for the community and projected forward.

³ Statistics Canada. [Public Microdata File Collection](#). Government of Canada.

Example: Bedroom demand projection (select maintainer age groups)

Step 1: PUMF-derived bedroom distribution by maintainer age group (for recent movers). Shares represent the proportion of households in each age group occupying each bedroom category.

Maintainer age group	0-1 bed	2 bed	3+ bed
...	...	...	...
35–44	18%	29%	53%
45–54	14%	31%	55%
55–64	22%	36%	42%
...	...	...	...

Step 2: Apply rates to projected households. Using the 2 bedroom dwellings as an example:

Maintainer age group	Projected households (2035)	Distribution for 2 bedroom dwellings	Output by age group
...	...	...	...
35–44	1,500	29%	435
45–54	2,000	31%	620
55–64	2,500	36%	900
...	...	...	...
Total 2 bedroom demand (select ages)			1,955

Step 3: Sum across all age groups to obtain raw demand totals by dwelling size.

Step 4: Once all dwelling sizes by projection year have been calculated, proportionally adjust results to match dwelling projection totals so that total numbers match up.

Example variables	Value
Projected dwellings (including shortage, 2035)	5,000
Total dwellings from Step 3 (2035)	4,000
Adjustment factor (projected / total)	1.25
Total one-bedroom dwellings from Step 3 (2035)	500
Adjusted one-bedroom dwellings (total x adjustment)	625
....	

Step 5: Calculate the rate of change by dwelling size between 2021 and each projected year, based on the result of Step 4. Apply this rate of change to actual 2021 Census totals for the community.

Dwelling size	2021	Change: 2021 to 2035	2035
...	...	...	...
2 bedroom	2,000	+30%	2,600
...	...	...	...

Step 6: Lastly, perform one final proportional adjustment to account for the difference between the totals from Step 6 relative to total dwelling demand (similar approach as Step 4).

Note that similar calculations are performed for both owner occupied and rent occupied dwellings.

Furthermore, for the sake of simpler formulas, 2021 total dwellings (incl. shortage) actually represent 2025 dwelling demand (excl. shortage). This means that calculations of net new demand using 2021 actually represent new demand since 2025 before the shortage is applied.

5.2 Dwelling Type

Dwelling type demand is estimated across three categories: single-detached, apartment, and other low density structures (semi-detached, row housing, mobile homes, etc.). A distribution of dwelling type by maintainer age group is again derived from the 2021 Census PUMF for recent movers, reflecting more current preferences by maintainer age group.

The calculation steps mimic that of Section 5.1, but with the number of bedrooms variable replaced by dwellings by structure type (though recategorized as noted above).

5.3 Family Structure

Future household demand by family type is estimated across five categories: couple without children, couple with children, lone parent, other census family, and non-census family (including one-person households and unrelated persons sharing a dwelling). A distribution of family type by maintainer age group is derived from the 2021 Census PUMF and applied to projected households, with results adjusted to 2021 Census actuals for the community, like previously demonstrated, though excluding the dwelling adjustments (data is reported in households) of Step 4 and Step 6.

5.4 Income Categories

Income categories are based on work performed by HART.⁴ Distributions are estimated using 2016 Census PUMF data (pre-COVID pandemic income supports), which provides the household income information needed to classify households relative to the Area Median Household Income (AMHI). Five income bands are used:

1. Very low income: below 21% of AMHI
2. Low income: 21% to 50% of AMHI
3. Moderate income: 51% to 80% of AMHI
4. Median income: 81% to 120% of AMHI
5. High income: above 120% of AMHI

Income categories are not a standardized Census product, so they need to be calculated separately. Given we are using a Canada-wide sample of data for our headship rates, we use Canada's median before-tax household income to compute the category thresholds. For instance, in 2016, the median income was \$70,336, meaning someone earning \$14,770 (income x 0.21) would be considered as earning "very low income."

⁴ Housing Assessment Resource Tools (HART). HART Housing Need Assessment Tool: [Methodology Guide](#). Page 3. University of British Columbia.

Once that is done, rates for income categories by age of maintainer can be computed, after which the same process is followed as other steps, with minor adjustments:

Instead of using household totals, the results are calculated as shares.

Projected shares are then applied to future total households to estimate totals by income category (no Step 4 or Step 6 from Section 5.1).

5.5 Household Size

Household size demand is estimated across five categories: 1-person, 2-person, 3-person, 4-person, and 5-or-more-person households. A distribution of household size by maintainer age group is derived from the 2021 Census PUMF and applied to projected households, with results adjusted to 2021 Census actuals for the community. Mirror the process of Section 5.3.

6 PRICE MODEL DEMAND

Housing demand is disaggregated by affordability tier: market, below-market, and deeply affordable. How dwellings are distributed across affordability tiers is dependent on the dwelling component and the distribution of incomes by category.

Dwelling size (number of bedrooms) demand distributions are then applied to the different tiers. Specifically, NOS distributions are applied to below-market and deeply affordable units (this assumes that dwellings are built to match needs, not necessarily wants). Broad dwelling size distributions (using data for those moving in the five years prior to the 2021 Census) are applied to market housing units.

How components of demand are assigned to affordability / price tiers

Tier	How it is assigned
Market unit demand	Total dwelling demand minus unhoused populations and total extreme core need households (adjusted to represent dwellings), multiplied by the share of households earning moderate or higher incomes.
Below-market demand	Market unit demand multiplied by the share of households earning low incomes, plus half of extreme core need dwellings.
Deeply affordable demand	The remainder (or market unit demand multiplied by the share of households earning very low incomes, plus half of extreme core need dwellings).