

# The NCRP Rental Housing Disadvantage Index (RHDI): What it is and How it is Calculated, 2016 Census Update

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Last revision of this document: 3 June 2019 **DRAFT FOR REVIEW ONLY**

*The RHDI was first created for the NCRP in 2014 by Richard Maaranen, NCRP Data Analyst.*

The Rental Housing Disadvantage Index (RHDI) was developed to identify specific locations of inadequate rental housing and housing-related distress among tenants in Canada's metropolitan areas. The RHDI is designed to help the Neighbourhood Change Research Partnership, as well as other policy analysts and service providers, to identify geographic areas with concentrations of low-income renters living in inadequate housing for purposes of further research and potential policy and program intervention.

The RHDI has both similarities and differences with Canada Mortgage and Housing Corporation's measurement of Core Housing Need (CHN). CMHC's CHN is based on three housing indicators from the census: adequacy, affordability, and suitability. The RHDI uses these same three measures but adds low-income renters. In addition, the RHDI has a geographic focus, at the census tract level, so as to identify and map the location of the concentrations of rental housing disadvantage by level of severity.

## CMHC's Definition of Core Housing Need

A household is said to be in core housing need if its housing falls below one or more of the adequacy, affordability, or suitability standards. In addition, a household would have to spend 30% or more of its total before-tax income on the median rent of alternative local housing that is acceptable (that is, it meets all three housing standards).<sup>1</sup>

A household is *not* in Core Housing Need if its housing meets all of the following three standards:

- adequate – reported by its residents as not requiring any major repairs;
- affordable – housing cost is less than 30% of total before-tax household income; and
- suitable – based on number of bedrooms for the size and make-up of the household, according to National Occupancy Standard definitions.

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<sup>1</sup> For CMHC's definitions, see <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/chn-biml/index-eng.cfm>

In addition, a household is *not* included in the CHN estimate if its housing fails to meet one or more of the three standards, but the household has sufficient income to obtain alternative local housing that meets all three standards. Non-family households led by maintainers 15 to 29 years of age attending school full-time are considered to be in a transitional stage of life and are not included in Core Housing Need, whatever their housing circumstances.

## How the Rental Housing Disadvantage Index is Calculated

The RHDI is calculated as the average of four location quotient indicators that measure the concentration of disadvantage at the census tract (CT) level in comparison to the census metropolitan area (CMA) average.

The first step is to calculate census tract percentages for each indicator.

1. ***Inadequate Housing*** is defined as the percentage of rented occupied dwellings requiring major repairs. Census respondents are asked to judge their own housing condition by choosing one of three possible responses: (1) regular maintenance only required, (2) minor repairs required, or (3) major repairs required. The Census questionnaire gives examples of repairs by their severity. Major repairs refer to the repair of defective plumbing, electrical wiring, structural repairs to walls, floors, or ceilings and other serious problems. Housing problems that are not considered severe include painting; furnace cleaning (considered regular maintenance); missing or loose floor tiles, bricks, or shingles; and defective steps, railings, or siding. Respondents are told to disregard desired remodelling or additions in their response.
  2. ***Unaffordable Housing*** is defined as the percentage of renter households paying 50% or more of income on rent. This is based on rent paid in the census year and the income reported on the previous year tax return. The percentage is calculated by dividing the occupant's total housing-related expenses (rent and utilities) by the household's total monthly income and multiplying the result by 100. The census questionnaire does not ask for this percentage from respondents directly; rather, the figures are derived by Statistics Canada from the occupant's self-reported shelter costs and tax return reported income.
  3. ***Unsuitable Housing*** is defined as the percentage of renter households with a bedroom shortfall. The census questionnaire asks respondents about the number of bedrooms, number of household members and household composition (gender, age). The census then makes a determination of suitability based on the National Occupancy Standard (NOS). The NOS identifies the number of bedrooms a household requires as follows:
    - A maximum of two persons per bedroom.
    - Household members, of any age, living as part of a married or common-law couple share a bedroom with their spouse or common-law partner.
    - Lone parents, of any age, have a separate bedroom.
    - Household members aged 18 or over have a separate bedroom, except those living as part of a married or common-law couple.
    - Household members under 18 years of age of the same sex share a bedroom, except lone parents and those living as part of a married or common-law couple.
    - Household members under 5 years of age of the opposite sex share a bedroom if doing so would reduce the number of required bedrooms. This situation would arise only in
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households with an odd number of males under 18, an odd number of females under 18, and at least one female and one male under the age of 5.

- An exception to the above is a household consisting of one individual living alone. Such a household would not need a bedroom (i.e., the individual may live in a studio apartment and be considered to be living in suitable accommodations).

4. **Low-Income Status** is defined as the percentage of renter households with before-tax total income (in the previous year) that is below half (50%) of the Census Metropolitan Area median household income (all households, owners and renters). This is the Low-Income Measure Before-Tax (LIM-BT) for renter households. Before-tax income is used here for historical comparability. After-tax incomes are not available before 2006 in the Census.

The second step is to convert the four census tract (CT) indicator percentages into four Location Quotients (LQ) using CMA-specific benchmarks. This calculation involves dividing each CT indicator percentage by the same indicator percentage for the CMA as a whole. A LQ of 1.0 represents the average level of disadvantage for renters in the CMA; a LQ of 0.6 (or 40% below the mean) represents below average concentration and a LQ of 1.8 (80% above the mean) represents above average concentration or intensity.

The third step is to calculate the average of the four indicator LQ's resulting in the RHDl score. In St. John's for example, an RHDl of 1.0 for a CT means approximately 5.6% of rental housing is inadequate, 18.7% is unaffordable, 4.0% is unsuitable and 52.3% of renters experience low-income status. Neighbourhoods in St. John's with percentages higher than the benchmarks reveal a spatial concentration of disadvantage. Other CMAs have different benchmarks for disadvantage. Note that various combination of the four indicators above or below these benchmarks could also average out at an RHDl of 1.0.

**Table 1**

### **Rental Housing Disadvantage Location Quotient Benchmarks 15 Canadian Census Metropolitan Areas, 2016**

CMA	Renters #	Inadequate		Unaffordable		Unsuitable		Low-Income	
		#	%	#	%	#	%	#	%
St. John's	25,480	1,420	5.6%	4,760	18.7%	1,010	4.0%	13,330	52.3%
Halifax	69,085	5,605	8.1%	14,100	20.4%	4,400	6.4%	27,435	39.7%
Québec	143,575	7,870	5.5%	17,240	12.0%	4,700	3.3%	54,805	38.2%
Montréal	765,480	60,410	7.9%	126,715	16.6%	72,090	9.4%	291,110	38.0%
Ottawa-Gatineau	178,745	14,320	8.0%	33,540	18.8%	14,550	8.1%	82,305	46.0%
Oshawa	30,855	3,085	10.0%	6,460	20.9%	2,460	8.0%	15,955	51.7%
Toronto	715,420	59,325	8.3%	166,095	23.2%	127,545	17.8%	302,330	42.3%
Hamilton	86,820	8,730	10.1%	17,150	19.8%	7,840	9.0%	41,085	47.3%
Winnipeg	100,110	9,190	9.2%	17,225	17.2%	13,455	13.4%	42,760	42.7%
Regina	28,545	2,080	7.3%	5,400	18.9%	3,285	11.5%	12,970	45.4%
Saskatoon	34,225	1,835	5.4%	6,575	19.2%	3,630	10.6%	15,355	44.9%
Calgary	140,345	8,270	5.9%	22,325	15.9%	12,350	8.8%	53,515	38.1%
Edmonton	151,500	10,345	6.8%	25,910	17.1%	17,675	11.7%	57,960	38.3%
Vancouver	347,220	23,745	6.8%	77,870	22.4%	42,970	12.4%	130,080	37.5%
Victoria	60,400	3,955	6.5%	12,845	21.3%	4,055	6.7%	23,600	39.1%

Source: Statistics Canada, Census 2016 Custom Tabulation, E02986.

## Comparison of the RHDl with Core Housing Need

There are a number of differences between the RHDl and CHN.

1. The RHDl is a measure of the spatial concentration of housing-related disadvantage experienced by people who rent. It reveals where inadequate, unaffordable, unsuitable rental housing and income deficiencies co-exist in significant proportions in particular neighbourhoods. Unlike CHN, the RHDl does not examine a four-way cross-tabulation of adequacy, affordability, suitability and low-income status. This means that some renters living in high disadvantage neighbourhoods have perfectly acceptable housing and income despite having many disadvantaged neighbours. Furthermore, some renters living in below average disadvantage neighbourhoods are seriously disadvantaged on all four indicators but there is no significant concentration of them. In contrast, the CHN data is fully cross-tabulated from Census microdata such that it is known exactly how many people/households fall below all four, three, two or just one of the housing criteria.
  2. The RHDl uses housing and low-income benchmarks that vary by urban region (CMA). Local housing markets, labour markets, and other regional factors produce different patterns of rental housing disadvantage. With CHN, the adequacy, suitability and affordability standards do not vary by urban region in Canada.
  3. The RHDl uses a higher cut-off for the affordability indicator: 50% of income spent on rent versus 30% for Core Housing Need. It is now common for renters in Canadian cities to spend 30% or more of their income on rent. The 30% cutoff is not necessarily an indicator that a household is experiencing serious financial hardship. In Toronto 47% of renters and 43% in Vancouver spend 30% or more of their income on rent (2016). Using 50% of income as the indicator increases the likelihood that a household is experiencing serious financial hardship because of the rent.
  4. The RHDl explicitly includes low-income status of renters as one of the indicators whereas Core Housing Need only considers income indirectly in order to calculate affordability. Income status is included in the RHDl because it affects the quality of life for renters in various ways independent of affordability stress. Renters in unaffordable housing (whether they pay 30% or 50% or more of income on rent) may or may not also have difficulty paying for non-housing necessities (especially if they are high-income households) and vice-versa. The RHDl attempts to mitigate this limitation by using a higher affordability threshold supplemented by an income deficiency measure to capture other aspects of disadvantage.
  5. The RHDl does not exclude households led by maintainer's age 15 to 29 years attending school full time. This may raise the RHDl score in some CTs where there is a sizeable population of low-income university students sharing unsuitable, unaffordable apartments in need of major repairs. We include this group because a purpose of the RHDl is to examine the full extent of housing in serious need of repair in each metropolitan area. For the RHDl it does not matter these households are in a transitional stage of life, as it does in assessing core housing need.
  6. The RHDl does not exclude households with shelter-cost-to-income ratios of 100% or more. This situation can occur due to the time lag between the values for the annual income (which is obtained from 2015 tax returns in the case of the 2016 census) and current year (2016) monthly rent at the time of the census. Housing costs and/or income levels could have increased or decreased within that time period for an unknown number of households.
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The four indicators that comprise the RHDI are general enough to make the index applicable to all Canadian cities at the census tract level. This facilitates comparisons regardless of regional differences in the characteristics of rented dwellings and their occupants. The index can be expanded to include other indicators or explore other relationships with the RHDI to suit various local contexts, depending on data availability. For example, the RHDI could also be calculated separately for a single CMA with a fifth indicator measuring concentrations of specific disadvantaged populations that experience societal discrimination (for example, Indigenous people in Winnipeg or Toronto's Black population).

A general limitation of the RHDI, like other census-based research, concerns the reliability of the census itself in which many responses are self-reported for a sample of households. There is possible misreporting in the various ingredients of the index:

- Household size and composition are self-reported on the census short-form which is applicable to 100% of households.
  - Income is also 100% data, obtained from Canada Revenue Agency tax returns
  - Housing tenure, monthly rent, number of bedrooms, and need for repairs are self-reported on the census long-form which is applicable to a 25% random sample of households
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