



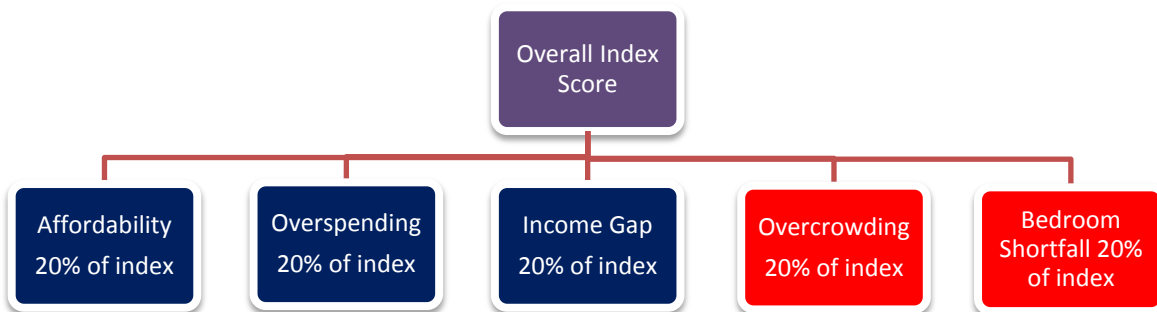
Section 1 – Methods

Using data from the National Household Survey (NHS) of the 2011 Census, the Rental Housing Index (RHI) examines rental housing affordability and overcrowding for all Canadian communities with more than 4,000 people, more than 500 renter households and with a Global Non-Response rate of less than 50%. This includes over 800 municipalities and regions and 338 federal ridings.

Each community in the Rental Housing Index has two Overall Index scores – one that illustrates how it compares to other communities in the same province (or the Territories, taken together), and another that illustrates how it compares to all communities in Canada. Given there are so few communities in the Territories, they are grouped together for comparative purposes. In addition, each province as a whole can only be compared against other provinces, and so they only have one Overall Index Score.

Five indicators are used to calculate the Overall Index Score for each municipality, region, federal riding, and province. Section 2 below provides a detailed description of each indicator and the methods used to calculate it. The Index is comprised of three income indicators (displayed below in blue) and two supply indicators (in red), meaning that the Index is weighted more heavily with income indicators.

Figure 1: Components of the Overall index score



Each indicator is given a raw score that is converted into a range between zero and 10. Zero represents perfect rental health and 10 is the community that ranks poorest on that particular indicator. A “10” on an indicator for a national score means it is the worst in Canada for that jurisdiction (province, region, federal electoral district, or municipality), while a “10” on an indicator provincially means it is the worst in that particular province.

The Overall Index Score is simply a sum of all indicator scores, leading to an overall score between zero and 50. Further details on the calculation of the Overall Index Score can be found in Section 3.



Section 2 – Indicators

Affordability

Affordability measures the percent of household income spent on rent plus utilities.

In order to calculate Affordability, we divide the average gross annual rent by average household annual income for each quartile and unit size. The example below is taken from the municipality of Victoria, using the numbers in red from the tables.

Table 1: Average income by income quartiles and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	\$10,460	\$10,078	\$10,513	\$11,256	\$14,316	\$10,284
Q2	\$25,254	\$26,711	\$27,353	\$27,706	\$29,617	\$26,855
Q3	\$43,578	\$45,048	\$45,891	\$45,394	\$46,934	\$45,260
Q4	\$84,477	\$82,255	\$92,339	\$93,863	\$104,419	\$88,945
All Quartiles	\$25,927	\$37,067	\$52,893	\$57,427	\$67,682	\$42,884

Table 2: Average gross rents by income quartiles and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	\$631	\$700	\$986	\$1,172	\$810	\$756
Q2	\$756	\$788	\$993	\$928	\$738	\$847
Q3	\$793	\$884	\$1,076	\$1,099	\$1,432	\$967
Q4	\$899	\$977	\$1,216	\$1,342	\$1,795	\$1,147
All Quartiles	\$711	\$823	\$1,094	\$1,160	\$1,437	\$930

Calculation:

$$\text{Yearly Rent} = \$847 \times 12 = \$10,164$$

$$\text{Affordability} = \frac{\$10,164}{\$26,855} = 38\%$$



On average, renter households in the second income quartile spend 38% of their income on rent and utilities.

When calculated for the entire community the table looks like this:

Table 3: Average percent of gross income spent on gross rent, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	72%	83%	113%	125%	68%	88%
Q2	36%	35%	44%	40%	30%	38%
Q3	22%	24%	28%	29%	37%	26%
Q4	13%	14%	16%	17%	21%	15%
All Quartiles	33%	27%	25%	24%	25%	26%

Overspending

Overspending measures renter households spending more than 50% of their before-tax income on rent plus utilities.

In order to calculate Overspending, we divide the number of renter households spending more than 50% of their income on rent and utilities by the total number of renter households. The example below is taken from the municipality of Victoria, using the numbers in red from the tables.

Table 4: Total number of renter households by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	920	3,930	1,235	145	50	6,320
Q2	430	3,895	1,605	405	30	6,385
Q3	295	3,510	1,975	455	80	6,350
Q4	155	2,620	2,720	665	150	6,370
All Quartiles	1,805	14,005	7,545	1,670	315	25,415





Table 5: Number of renter households spending more than 50% of gross income on rent and utilities by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	685	3,060	1,035	110	45	4,945
Q2	35	405	555	90	0	1,085
Q3	0	30	45	75	20	200
Q4	0	0	0	0	0	0
All Quartiles	720	3,500	1,640	270	75	6,250

Calculation:

$$\text{Overspending} = \frac{6,250}{25,415} = 25\%$$

In Victoria, 25% of all renter households spend more than 50% of their before-tax household income on rent and utilities.

When calculated for the entire community the table looks like this:

Table 6: Average percent of before-tax income spent on rent and utilities by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	74%	78%	84%	76%	90%	78%
Q2	8%	10%	35%	22%	0%	17%
Q3	0%	1%	2%	16%	25%	3%
Q4	0%	0%	0%	0%	0%	0%
All Quartiles	40%	25%	22%	16%	24%	25%

Income Gap

Income gap measures the additional income a renter household would need per year to make its current rent affordable (30% of before-tax income).





In order to calculate the Income Gap, we first determine the income required to make the average current annual rent affordable by dividing the average current annual rent by 0.3. We then subtract the average household income from that number. If there is no gap, it is recorded as \$0.

The example below is taken from the municipality of Victoria, using the numbers in red from the tables.

Table 7: Average income by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	\$10,460	\$10,078	\$10,513	\$11,256	\$14,316	\$10,284
Q2	\$25,254	\$26,711	\$27,353	\$27,706	\$29,617	\$26,855
Q3	\$43,578	\$45,048	\$45,891	\$45,394	\$46,934	\$45,260
Q4	\$84,477	\$82,255	\$92,339	\$93,863	\$104,419	\$88,945
All Quartiles	\$25,927	\$37,067	\$52,893	\$57,427	\$67,682	\$42,884

Table 8: Average monthly gross rent, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	\$631	\$700	\$986	\$1,172	\$810	\$756
Q2	\$756	\$788	\$993	\$928	\$738	\$847
Q3	\$793	\$884	\$1,076	\$1,099	\$1,432	\$967
Q4	\$899	\$977	\$1,216	\$1,342	\$1,795	\$1,147
All Quartiles	\$711	\$823	\$1,094	\$1,160	\$1,437	\$930

Calculation (absolute value):

$$\text{Yearly Rent} = \$756 \times 12 = \$9,072$$

$$\text{Income Gap} = (\$9,072 \div 0.3) - \$10,284 = \$19,956$$

An average household in Quartile One in Victoria need at least an additional \$19,956 to afford their current rent.



When calculated for the entire community the table looks like this:

Table 9: Average income gap by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	\$14,780	\$17,922	\$28,927	\$35,624	\$18,084	\$19,956
Q2	\$4,986	\$4,809	\$12,367	\$9,414	\$0	\$7,025
Q3	\$0	\$0	\$0	\$0	\$10,346	\$0
Q4	\$0	\$0	\$0	\$0	\$0	\$0
All Quartiles		\$0	\$0	\$0	\$0	\$0

Households with affordable rents are not factored into the Index, so if the income gap is less than \$0, we count it as \$0.

Calculation (relative value):

In addition to displaying the Income Gap as an absolute number, we also display it as a percentage of average household income *for that income quartile and unit size*, as follows:

$$\text{Income Gap as \% of Household Income} = \frac{\text{Income Gap}}{\text{Average Household Income}} = \frac{\$19,956}{\$10,284} = 194\%$$

An average household in Quartile One in Victoria would need a minimum increase in household income of 194% to make their rent affordable.

When calculated for the entire community the table looks like this:

Table 10: Income gap as a percentage of average household income, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	141%	178%	275%	316%	126%	194%
Q2	20%	18%	45%	34%	0%	26%
Q3	0%	0%	0%	0%	22%	0%
Q4	0%	0%	0%	0%	0%	0%
All Quartiles	10%	0%	0%	0%	0%	0%





Overcrowding

Overcrowding measures renter households living in dwellings that are not suitable for their household size and composition, based on CMHC's National Occupancy Standard.

In order to calculate Overcrowding, we divide the total number of unsuitable renter households by the total number of renter households in that quartile.

The example below is taken from Victoria, using the numbers in red from the tables.

Table 11: Total number of renter households, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	920	3,930	1,235	145	50	6,320
Q2	430	3,895	1,605	405	30	6,385
Q3	295	3,510	1,975	455	80	6,350
Q4	155	2,620	2,720	665	150	6,370
All Quartiles	1,805	13,950	7,535	1,670	315	25,415

Table 12: Total Number of Households living in overcrowded conditions, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	95	210	0	0	0	335
Q2	75	315	45	0	0	450
Q3	55	425	90	0	0	585
Q4	95	435	260	0	0	795
All Quartiles	2,170	315	1,385	430	40	2,170

Calculation:

$$\text{Overcrowding} = \frac{2,170}{25,415} = 8.5\%$$

8.5 % of all renter households in Victoria live in overcrowded (unsuitable) conditions.



When calculated for the entire community the table looks like this:

Table 13: Percent of renter households living in overcrowded conditions, by income quartile and unit size, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1	10%	5%	0%	0%	0%	5%
Q2	17%	8%	3%	0%	0%	7%
Q3	19%	12%	5%	0%	0%	9%
Q4	61%	17%	10%	0%	0%	12%
All Quartiles	120%	2%	18%	26%	13%	9%

Bedroom Shortfall

The bedroom shortfall measures the minimum number of additional bedrooms a community would need to house all renters suitably, based on CMHC's National Occupancy Standard.

In order to calculate Bedroom Shortfall, we divide the bedroom shortfall by the total number of bedrooms in a community.

Note that we only calculate the bedroom shortfall for **income quartiles** because the data is more reliable at this scale for this particular indicator. The example below is taken from the municipality of Victoria, using the numbers in red from the tables.

Table 14: Total number of bedrooms by income quartile, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1						7,955
Q2						8,870
Q3						9,440
Q4						10,810
All Quartiles						37,795



Table 15: Bedroom shortfall by income quartile, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1						375
Q2						520
Q3						640
Q4						985
All Quartiles						2,540

Calculation:

$$\text{Bedroom Shortfall} = \frac{1x (\#households\ unsuitable\ by\ 1\ bedroom) + 2x (\#households\ unsuitable\ by\ 2\ bedroom) + 3x (\#households\ unsuitable\ by\ 3\ bedroom)}{\text{Total Number of Renter Bedrooms}}$$

Example:

$$\text{Bedroom Shortfall} = \frac{2,540}{37,795} = 6.7\%$$

Victoria needs a 6.7% increase in its total number of rental bedrooms in order to house all rental households suitably.

When calculated for the entire community the table looks like this:

Table 16: Bedroom Shortfall as a percentage of all bedrooms by income quartile, Victoria

Quartile	Unit Size					All Units
	Studio	1bdrm	2bdrm	3bdrm	4bdrm	
Q1						4.7%
Q2						5.9%
Q3						6.8%
Q4						9.1%
All Quartiles						6.7%



Section 3 - Index Methodology

Once all of the percentages are calculated for each income indicator (affordability, income gap and overspending), we convert the raw percentages into a Community Indicator Score by multiplying the quartile scores by 10 and then summing them. For supply indicators (bedroom gap and overcrowding) we transform the value for the community as a whole, rather than summing across quartiles. The rationale for using the community score is that there are less data suppression issues at the community level for these particular indicators.

Here is an example for Overspending:

Table 17: Overspending indicator calculation, Victoria

Quartile	All Units	Calculation (X 10)
Q1	78%	7.8
Q2	17%	1.7
Q3	3%	0.3
Q4	0%	0
	Sum	9.8

Quartiles that spend less than 30% of income on rent and utilities receive a 0 value because these income quartiles have affordable rents, on average.

We chose to sum the transformed value across quartiles in order to capture the affordability issues that exist within each of the quartiles. Averaging them would have diluted the impact of these issues within the Index as a whole. For instance, in Victoria, the city-wide average shows that 26% of renter household income is spent on rent and utilities. But this masks some serious problems faced by those households making less than \$10,500 who spend an average of 88% of their gross household income on rent.

After calculating the raw indicator score for all communities in the RHI, we then apply another calculation to make the indicator score out of 10. Zero is assigned to a perfect state of rental health (0 households spending more than 50% of income on rent in the case of overspending). The community that ranks poorest for that indicator is given a score of 10. All other communities are ranked according to how close they fall to the poorest community, both within a province and within the country as a whole.



Each community thus has two overall index scores – one that compares itself to other communities in the province (or Territories taken together) and another that compares itself to all communities in Canada. After this ranking is performed for each community, all indicator scores are summed to obtain the Overall index scores for that community.

