

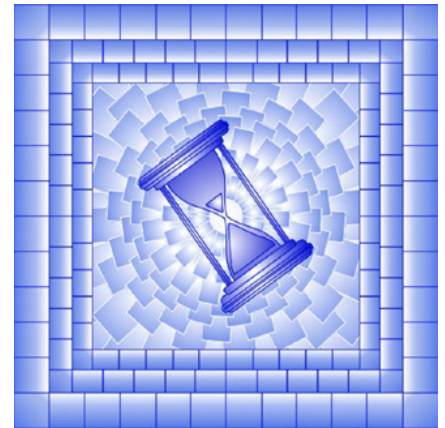
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Technical Guide for the New Condominium Apartment Price Index (NCAPI)

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Introduction

The new condominium apartment price index (NCAPI) measures the change over time in prices for newly-built, apartment-style condominiums. The NCAPI is a quarterly index, covering Halifax, Calgary, Edmonton, Montréal, Québec City, Ottawa, Toronto, Vancouver, and Victoria. The NCAPI is computed using a unit-value approach, wherein the price of a unit is standardized by its square-footage to give a price per square foot. Quality adjustments are made prior to calculating these unit prices in order to produce a constant-quality index.

The NCAPI closes data gaps in the measurement of new residential property price indexes and produces more accurate and representative price indexes for the new housing market. Along with the new housing price index, the NCAPI allows economists, academics, and the general public to monitor trends in the new residential sector of the construction industry.

1. Data

1.1 Sampling Process

The sampling frame is compiled from various internet sources that provide information on upcoming condominium building developments.

The NCAPI uses a multi-stage sample design in which units are selected into the sample at each stage. The first stage of sampling involves contacting condominium apartment developers to determine if they are in scope for the survey. To ensure that the same condominium building can be followed through time, an in scope condominium apartment developer is asked to report for up to four buildings they are developing in each census metropolitan area (CMA) they are building in, in which less than 70% of at least one of the target unit types have been sold. If a condominium apartment developer has more than four buildings available for sale in the same CMA, they are asked to report the buildings with the largest number of in target units available for sale. Target unit types include: one bedroom, one bedroom plus den, two bedroom, two bedroom plus den and three bedroom. The second stage of sampling involves selecting the buildings into the sample and collecting project and building information which includes project location, size of land, land features, building size, number of floors, elevators and units and building amenities. Unit information is also collected during the second stage of sampling, which includes the unit's selling or list price, indoor living area, floor number, orientation direction, number of full and half baths, and the value of premiums and incentives.

Over time, condominium apartment developers will enter and exit the market. In addition, new condominium developments launch when sales of existing ones are completed. As a result, the sample of condominium apartment developers, developments, buildings and units must be refreshed over time. Developers are asked to report a replacement building or project that is available for sale. Questions in the electronic questionnaire help condominium apartment developers identify when and what criteria to use in choosing new condominium developments and buildings for price collection. If replacement buildings are not available immediately, developers are contacted over the phone on the date they have reported a new condominium development will begin selling, so that it can be added to the sample. In some cases, these developers will receive an electronic questionnaire as opposed to a phone call, to provide information about the new building themselves.

1.2 Prices

For the purpose of the NCAPI, prices are defined as either the transaction price or the list price, if a transaction did not occur in the reference period, for a unit as reported by the condominium apartment developer in a given month, exclusive of any sales tax. This is the amount received by the condominium apartment developer, and excludes any additional fees paid by the buyer.

1.2.1 Electronic Questionnaire – New Condominium Apartment Price Report

Once a condominium apartment developer and a building are determined to be in scope, an electronic questionnaire is used to collect price information from the developer who can report for up to ten units in the building each month. The maximum number of units in each unit type that can be selected to represent a building are: 3 units for a one bedroom, 2 units for a 1 bedroom with a den, 2 units for a two bedroom, 2 units for a two bedroom with a den and 1 unit for a three bedroom unit type. Condominium apartment developers also report any premiums applied to a unit (e.g., floor and orientation premiums, incentives, design upgrades, the value of a parking and storage spots within the building).

1.2.2 Administrative and alternative data sources

This source supplements the prices and data received from the electronic questionnaire. Prices collected through this method are list prices as posted on the condominium apartment developer's website. Unit type and its characteristics are also captured.

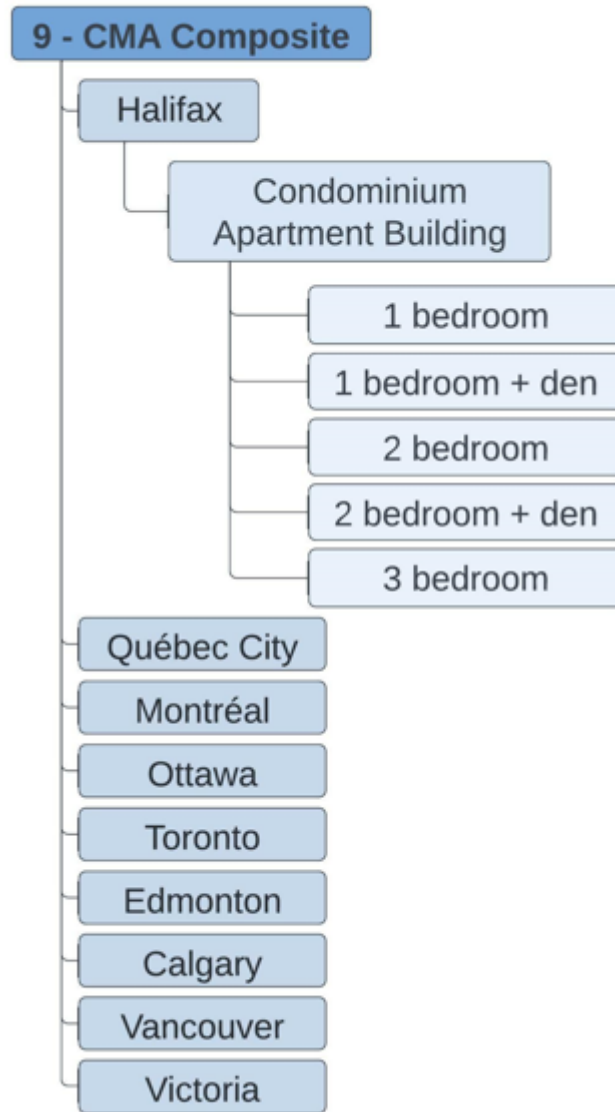
1.3 Cleaning and filtering

The data collected from condominium apartment developers are manually reviewed for consistency and completeness, and certain records may be edited or removed based on judgement. Prices are adjusted for premiums and incentives as reported by the builder. Price relatives greater than or less than 5% are reviewed on a case by case basis and compared against market trends for the local market – they can be excluded if they are not representative of market conditions or the rest of the reported data in the index calculation. The NCAPI has a one quarter revision period to allow for adjustments when new information becomes available from respondents.

2. Aggregation Structure

The NCAP aggregation structure is presented in Figure 1.

Figure 1
The NCAP aggregation structure



3. Index Calculation

First, any premia are subtracted from the price of a unit to arrive at a quality-adjusted price for a “no-frills” reference unit. The quality adjusted price is then standardized by the square footage of a unit to arrive at a quality-adjusted unit price. Units are stratified by CMA, building, and unit type, and an unweighted geometric index is calculated for each stratum, giving a price relative for each stratum. The combination of stratification and explicit quality adjustment means that the same type of unit within each building is compared over time, giving these price relatives a constant-quality interpretation.¹ These stratum-specific price relatives are then aggregated to the

1. Two notable characteristics for which no adjustment is made are number of bathrooms in a unit and outdoor living area (e.g., balcony), as condominium apartment developers are unable to explicitly price these characteristics.

CMA level using a Jevons index. The NCAPI is calculated monthly, and the three index values within a quarter are averaged to produce a quarterly index.

To make the index calculation explicit, let p_{usbt} be the price of unit u of type S in building b at time t , let Δ_{usbt} the value of the premia for this unit, and let a_{usbt} be its square footage. The quality-adjusted unit price is calculated as

$$\rho_{usbt} = \frac{p_{usbt} - \Delta_{usbt}}{a_{usbt}}.$$

These unit prices are used in a geometric index to produce a collection of strata-level indices between period $t-1$ and period t ,

$$I_{sbt}^{t-1} = \frac{\prod_{u=1}^{U_{sbt}} (\rho_{usbt})^{1/U_{sbt}}}{\prod_{u=1}^{U_{sbt-1}} (\rho_{usbt-1})^{1/U_{sbt-1}}},$$

where U_{sbt} is the number of units sold of type S in building b at time t . To produce a CMA-level index, the within-CMA relatives for each unit type in each building are aggregated with a Jevons index

$$I_t^{t-1} = \prod_{b=1}^{B_t} \prod_{s=1}^{S_{bt}} (I_{sbt}^{t-1})^{1/\sum_{b=1}^{B_t} S_{bt}},$$

where S_{bt} is the number of unit types in building b and B_t is the number of buildings. These period-over-period indices are chained with the previous period's index value to give the current-period index value

$$I_t = I_t^{t-1} \cdot I_{t-1},$$

where I_{t-1} is the index that runs from the base period to period $t-1$. If a new building is introduced into the sample in a period, there is no attempt to impute back prices for the units in this building. This means that a building is not included in the index calculation in the first period that it is introduced into the sample.

Finally, the quarterly CMA-level index is simply the average of the three index values within that quarter. For the quarter starting in month q , the index is

$$I_q = \frac{1}{3} \sum_{t=q}^{q+2} I_t.$$

3.1 Weights

Weights for the CMAs are estimated annually and released with first quarter data. The weights to aggregate the CMA-level index to the 9 CMA composite are derived from sales values from the Canada Mortgage and Housing Corporation's Market Absorption Survey. The 9 CMA composite is calculated using the Lowe formula combining the weighted CMA-level indexes.