# **StatCan-CMHC Proximity Measures Database – Early release**

Over the last year, Statistics Canada (StatCan) and Canada Mortgage and Housing Corporation (CMHC) have collaborated on the implementation of a set of proximity measures to services and amenities. CMHC funded this collaboration to generate data and analytical work in support of the National Housing Strategy.

The result of this collaboration is the first nation-wide Proximity Measures Database (PMD). This database is now available as an early release to meet urgent information needs of departments and other stakeholders across Canada who are dealing with the COVID-19 crisis. The current situation involving COVID-19 emphasizes the importance of having timely and accessible information available to the public at all levels of government. Proximity measures developed are relevant to the current situation by providing the

This work is expected to be further developed and revised as new and updated information on the geolocation of services becomes available.

## **Concise description of the database and methods**

The database contains 10 measures of proximity and a composite indicator that combines some of the proximity measures.

All measures are at the dissemination block level (a block in urban areas or an area bounded by roads in rural areas), this provides the highest level of geographic resolution currently possible. Hence, the database has approximately half a million records. Some measures are more limited in their nationwide coverage as data is not always made readily available at the desired geographic level by its administrators. As the number of authoritative open data sources increases, a trend in recent years, future iterations of the proximity measures will have more comprehensive coverage spatially.

Proximity measures are based on a simple gravity model that accounts for the distance between a reference dissemination block DB and all the DBs in which the service is located (within a given distance) and the size of the services. The measure accounts also for the presence of services within the DB of reference.

All measures, except public transit, are based on network distances between the centroids of dissemination blocks (as opposed to straight line distances). For some measures a walking network is used while for other measures a driving network is used, as explained below. For public transit, the walking network distance is between the centre of a dissemination block and any public transit stop within a given range.

The size of the service is captured by total employment or total revenue of the service, or more simply, the presence of points of access to the service within a given distance. The measure of size of the service is specific to each measure and is explained below.

The measures are released as a normalized index value, meaning that the values resulting from computations were converted to a scale from 0 to 1, where 0 indicates the lowest proximity and 1 the highest proximity in Canada. The values are normalized at the national level in order to retain as much detail as possible. This allows for more intricate analyses to be conducted on more granular geographies. Dissemination blocks with no value are those with no service within a given distance.

The following data sources and specifications are used for each measure. Note that businesses beyond the stated threshold of a reference DB are not included in the measure of that reference DB.

**Proximity to employment** measures the closeness of a dissemination block to any dissemination block within a driving distance of 10 km. This measure is derived from the employment counts of all businesses (that is, all North American Industry Classification Codes) in the Business Register.

**Proximity to grocery stores** measures the closeness of a dissemination block to any dissemination block with a grocery store within a walking distance of 1 km. This measure is derived from the total revenue of all NAICS 4451 businesses in the Business Register.

**Proximity to pharmacies** measures the closeness of a dissemination block to any dissemination block with a pharmacy or a drug store within a walking distance of 1 km. This measure is derived from the presence of all NAICS 446110 businesses in the Business Register.

**Proximity to health care** measures the closeness of a dissemination block to any dissemination block with a health care facility within a driving distance of 3 km. This measure is derived from the employment counts of all NAICS 6211, 6212, 6213, 621494, and 622 businesses in the Business Register.

**Proximity to child care** measures the closeness of a dissemination block to any dissemination block with a child care facility within a walking distance of 1.5 km. This measure is derived from the presence of all NAICS 624410 businesses in the Business Register.

**Proximity to primary education** measures the closeness of a dissemination block to any dissemination block with a primary school within a walking distance of 1.5 km. Primary schools are classified as education facilities with an International Standard Classification of education (ISCED) level of 1. The data source is a conglomeration of the Open Database of Education Facilities and other sources of education facilities.

**Proximity to secondary education** measures the closeness of a dissemination block to any dissemination block with a secondary school within a walking distance of 1.5 km. The data source is a conglomeration of the Open Database of Education Facilities and other sources of education facilities where secondary schools are classified as ISCED2 and/or ISCED3.

**Proximity to public transit** measures the closeness of a dissemination block to any source of public transportation within a 1 km walking distance. This measure is derived from the number of all trips between 7:00 a.m. - 10:00 a.m. from a conglomeration of 95 General Transit Feed Specification (GTFS) data sources.

**Proximity to neighborhood parks** measures the closeness of a dissemination block to any dissemination block with a neighborhood park within a 1 km walking distance. This measure is derived from the presence of all parks from a conglomeration of authoritative open data sources and OpenStreetMap.

**Proximity to libraries** measures the closeness of a dissemination block to any dissemination block with a library within a 1.5 km walking distance. This measure is derived from the presence of all libraries from a conglomeration of authoritative open data sources.

An aggregate measure was created to indicate neighbourhoods that have access to basic needs for a family with minors. A dissemination block with access to at least one grocery store, pharmacy, health care facility, child care facility, primary school, library, public transit stop, and employment[[1]](#footnote-0) is referred to as an amenity dense neighbourhood. A high amenity density neighbourhood is defined as an amenity dense neighbourhood that has proximity measure values in the top third of the distribution for each of the eight proximity measures.

Due to the usage of different data sources for the various types of amenities, some inconsistencies between sources were found. For example, open data sources may suggest that a school exists within a dissemination block but the BR suggests that there is no source of employment within that same dissemination block. In cases like these, all proximity measures are suppressed.

*Will there be contact information included for those who have questions about the database?*

1. A grocery store, pharmacy, and public transit stop within 1 km walking; a childcare facility, primary school, and library within 1.5 km walking; a health facility within 3 km driving; and employment within 10 km driving. [↑](#footnote-ref-0)