User Guide and Data Dictionary for Preliminary COVID-19 Data

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User Guide and Data Dictionary for Preliminary COVID-19 Data

1. Background

COVID-19 is the disease caused by SARS-CoV2, a novel coronavirus that has not been identified before the first cases were reported in Wuhan, China, in December 2019. The virus has now spread to almost all countries around the world. The first confirmed cases in Canada appeared in January 2020.

There is still a lot that is unknown about the virus and limited data available for researchers to study it. In Canada, the 10 provinces and 3 territories are providing the Public Health Agency of Canada (PHAC) information on COVID-19 cases on a daily basis. In collaboration with PHAC, Statistics Canada (STC) contributes to make these preliminary data available to the research community and to all Canadians.

2. Objectives of the "Detailed preliminary information on confirmed cases of COVID-19 (Revised)" Table

PHAC and STC have been working closely together to be able to provide preliminary data received by the provinces and territories (PTs) to researchers.

The Detailed preliminary information on confirmed cases of COVID-19 table is a data product that provides easy access to as much data as possible, by provincial regions, while respecting confidentiality of the individuals for which information on COVID-19 history is reported.

Given the COVID-19 pandemic is still progressing, the content of this table will be updated regularly, making it a unique and relevant product. Each iteration of the table will provide up-to-date case information reported by PTs.

3. Coverage of the "Detailed preliminary information on confirmed cases of COVID-19 (Revised)" Table

The data published by STC contains cases for which detailed case information was submitted by the provincial or territorial public health authority to PHAC. The governments of Canada and the provinces and territories agreed on a common Case Report Form (CRF)[1] to be used to report cases to PHAC. With increasing numbers of cases, most provinces are now sending datasets that include the same variables as the CRF.

These data may not match the total cases reporting done at the provincial and territorial levels, which are updated daily by each jurisdiction and compiled by PHAC. The discrepancy is due to factors such as delays in reporting, or variability in reporting cut-offs. Given the under coverage, these data are a subset of the total reported cases in Canada.

Routine updates on health outcome status are not made uniformly across Canada, and therefore the data may underestimate the number of hospitalizations, admissions to intensive care units, deaths and recoveries.

The first table iteration contains 30778 cases; this represents all the confirmed cases received from PHAC as of May 13, 2020. It does not include all confirmed cases in Canada. The number of cases will increase with each table iteration, as more data is received from PHAC.

The data on this table is preliminary and subject to change as updated information is received from the provinces and territories.

4. Content of the "Detailed preliminary information on confirmed cases of COVID-19 (Revised)" Table

This table is a subset of the information that provinces and territories collect using the *Coronavirus Disease (COVID-19) Case Report Form*. The variables selected were those that were considered to be the most important while meeting a certain quality threshold. Also, some "derived variables" were computed by PHAC based on the information contained in the case report forms.

To minimize the risk of disclosure:

1. a few categories from the original questions collected on the form have been grouped together:
    - ▶ The provinces and territories have been grouped into the following regions:
        - British Columbia & Yukon
        - Alberta, Saskatchewan, Manitoba & the Northwest Territories
        - Ontario & Nunavut
        - Quebec
        - New Brunswick, Nova Scotia, Prince Edward Island & Newfoundland and Labrador
    - ▶ The age in years of individuals has been grouped into age groups:
        - 0-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+

2. a few categories from the original questions have been reclassified:
    - ▶ Occupation
        - Health care workers, school or daycare workers/attendees and residents of long-term care facilities have remained as their own categories.
            - ◦ Please note that healthcare workers include those with and without direct patient contact. Long-term care residents may include residents of senior's homes, assisted living facilities, and retirement communities, as well as nursing homes. Long-term care facilities may be privately run or under provincial authority.
        - Farm worker, laboratory worker and veterinary/animal worker have been grouped with 'other'.

3. a few derived variables have been created:
    - ▶ Dates (Episode Date, Onset Date, Recovery Date)
        - All dates were converted to weeks, i.e., Episode Week, Onset Week, Recovery Week.
        - All cases with an episode date and/or onset date prior to February 23rd, 2020 (the first day of the 8th week of 2020) were grouped with the cases in week 8. For those cases that also had a recovery date, the recovery week was also shifted forward the same amount as the episode and/or onset date.

Refer to the data dictionary for detailed information about each variable.

STC is working with PHAC on the preparation of a master file which will include more details and more variables. This will be available in the near future through a new product availability announcement in the STC's *The Daily*.

The information on this table is considered **preliminary**.

5.   Limitations

This dataset includes cases who are confirmed according to the Canadian interim national case definition for COVID-19, that is: "A person with laboratory confirmation of infection with the virus that causes COVID-19 performed at a community, hospital or reference laboratory (NML or a provincial public health laboratory) running a validated assay."[2]

COVID-19 testing was initially performed for diagnostic purposes only (i.e., to confirm the diagnosis of suspected cases of COVID-19), and then, increasingly, for screening based on public health priorities (high-risk groups or contact tracing). None of these tests were conducted for research purposes, and the screening was not designed to be conducted in a probabilistic sample representative of the Canadian population.

The expansion of laboratory testing evolved over time following the epidemiology of the disease, i.e., the spread of the disease from China to other countries and the establishment of community transmission in Canada.

With increasing laboratory capacity, some provinces were able to screen people from targeted groups, e.g., residents and staff of long-term care facilities where cases have occurred, or contacts of cases identified in epidemiologic investigations. These expansions of testing did not occur simultaneously across provinces and territories. Additionally, testing capacity and prioritization continue to differ between provinces and territories, thus skewing any inter-jurisdictional comparison.

The factors listed above must be taken in consideration when interpreting data analysis. Examples of possible bias include:

- ▶ One could observe that the proportion of symptomatic cases decreased over time, which is simply because initially, only symptomatic individuals were eligible to be tested.
- ▶ Following outbreaks in long-term care facilities, some jurisdictions undertook mass screening in residents of these facilities, which may impact the age distribution of cases. Mass screening in specific segments of the population may lead to their over-representation in the confirmed case data, as general population mass screening has not occurred on a large scale.
- ▶ Any comparisons between provinces and territories using demographics or health outcomes may be biased by differences in testing criteria.

6.   Data quality concerns

Routine updates on health outcome status are not made uniformly across Canada, therefore the data may underestimate the number of hospitalizations, admissions to intensive care units, deaths and recoveries.

There is a high proportion of missing values.

Some of the variables on the PHAC COVID-19 file contained an "other, specify" free text field (occupation, symptoms) that was not accounted for. Those fields will be reviewed at some point and the variables on this table might be recoded.

Some sections of the case report form were filled in inconsistently.

STC and PHAC are working closely together to improve the quality of the file with the help of all provinces and territories. This will be reflected in each iteration of this table.

7.   References

1. CORONAVIRUS DISEASE (COVID-19) CASE REPORT FORM https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/2019-novel-coronavirus-infection/health-professionals/2019-nCoV-case-report-form-en.pdf

2. Interim national case definition: Coronavirus disease (COVID-19) https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/national-case-definition.html

Appendix I - Data dictionary, Section on the Form, Concept and Universe

Variable Name	Section on the Form	Concept	Universe
Case identifier number	Administrative Information	Unique identifier for each case	All cases
Region	Administrative Information	Province/Territory where the case resides, grouped by regions.	All cases
Episode week	Administrative Information	Week of the episode, derived using symptom onset date or the closest date available.	All cases
Episode year	Administrative Information	Year of the episode, derived using symptom onset date or the closest date available.	All cases
Gender	Case Details	The gender of the case	All cases
Age group	Case Details	Age group corresponding to the age of the case	All cases
Occupation	Case Details	Indicates the case's occupation	All cases
Asymptomatic	Symptoms	Indicates if the case was asymptomatic.	All cases
Onset week of symptoms	Symptoms	Week of symptom(s) onset	All cases
Onset year of symptoms	Symptoms	Year of symptom(s) onset	All cases
Symptom - cough	Symptoms	Case reported cough	All cases
Symptom - fever	Symptoms	Case reported fever ($\geq$38°C)	All cases
Symptom - chills	Symptoms	Case reported feverish/chills (temperature not taken)	All cases
Symptom - sore throat	Symptoms	Case reported sore throat	All cases
Symptom - runny nose	Symptoms	Case reported runny nose	All cases
Symptom - shortness of breath	Symptoms	Case reported shortness of breath/difficulty breathing	All cases
Symptom - nausea	Symptoms	Case reported nausea/vomiting	All cases
Symptom - headache	Symptoms	Case reported headache	All cases
Symptom - weakness	Symptoms	Case reported general weakness	All cases
Symptom - pain	Symptoms	Case reported pain (muscular, chest, abdominal, joint)	All cases
Symptom - irritability	Symptoms	Case reported irritability/confusion	All cases
Symptom - diarrhea	Symptoms	Case reported diarrhea	All cases
Symptom - other	Symptoms	Case reported other symptoms	All cases
Hospital status	Clinical Course and Outcomes	Indicates if the case was hospitalized and if the case was admitted to the intensive care unit.	All cases
Recovered	Clinical Course and Outcomes	Indicates if the case has recovered.	All cases
Recovery week	Clinical Course and Outcomes	Month reported recovered	Recovered=1
Recovery year	Clinical Course and Outcomes	Year reported recovered	Recovered=1
Death	Clinical Course and Outcomes	Indicates if the case died while infected by COVID-19.	All cases
Transmission	Exposures	Location where exposure occurred	All cases

Appendix II - Data dictionary, Notes and Limitations

Variable Name	Note and Limitation
Case identifier number	Created randomly by Statistics Canada. The same case will have a different number every time that the file is released.
Region	To ensure confidentiality, some provinces/territories have been grouped together by Statistics Canada.
Episode week	Derived by Statistics Canada from EpisodeDate (not available on this dataset). Episode date is derived based on onset date > specimen collection date > lab result > NML confirmation date. 0 represents the first days of the year leading up to, but not including the first Sunday. 1 represents the first full week of the year, beginning on the first Sunday, and so on.
Episode year	Derived by Statistics Canada from EpisodeDate (not available on this dataset). Episode date is derived based on onset date> specimen collection date > lab result > NML confirmation date.
Gender	Derived from the Gender variable received from PHAC (not available on this dataset). Missing values and ''Other'' were assigned to 'Not Stated'.
Age group	
Occupation	Healthcare workers include those with and without direct patient contact. Long-term care residents may include residents of senior's homes, assisted living facilities, and retirement communities, as well as nursing homes. Long-term care facilities may be privately run or under provincial authority. Laboratory worker handling biological specimens, Veterinary/animal worker and Farm worker have been categorized with the "Other" due to low frequencies. The free-text field 'occupation_spec' has not been cleaned, and it is expected that some re-coding is necessary (occupation classification will change for some cases).
Asymptomatic	Derived from the symptoms. If no symptoms were experienced, then asymptomatic is yes. If any symptoms were experienced then asymptomatic is no.
Onset week of symptoms	Derived by Statistics Canada from OnsetDate (not available on this dataset). 0 represents the first days of the year leading up to, but not including the first Sunday. 1 represents the first full week of the year, beginning on the first Sunday, and so on.
Onset year of symptoms	Derived by Statistics Canada from OnsetDate (not available on this dataset).
All symptoms	Each symptom variable has a corresponding "sym_specify" free-text field. This field is currently being reviewed and cleaned by medical experts, and it is expected that some cases will change response to the symptom variables. Cleaning and reviewing of "OtherSymptom_spec" is also underway - this is also expected to impact responses to the other symptom variables.
Hospital status Recovered	Routine updates on health outcome status are not made uniformly across Canada, and therefore the data may underestimate the number of hospitalizations, admissions to intensive care units, deaths and recoveries.
Recovery week	Derived by Statistics Canada from Recovery Date (not available on this dataset). 0 represents the first days of the year leading up to, but not including the first Sunday. 1 represents the first full week of the year, beginning on the first Sunday, and so on.
Recovery year	Derived by Statistics Canada from Recovery Date (not available on this dataset).
Death	Refer to the comment in "Hospital Status".
Transmission	Domestic acquisition – Contact of COVID case: Includes cases who reported having close contact with a confirmed or probable COVID-19 case in the 14 days prior to symptom onset. Domestic acquisition– Contact with traveler: Includes cases who reported having close contact with a symptomatic person who had traveled to an affected area in the 14 days prior to their illness onset. Domestic acquisition – Unknown source: Includes cases who had not travelled, and 1) who had reported no contact with a COVID-19 case or symptomatic traveller, or 2) whose information on contact with a case or contact with a symptomatic traveler was unknown or missing. International travel: Includes cases who reported having travelled outside of their province / territory of residence or outside of Canada within the 14 days prior to symptom onset. Information pending: Includes cases for which information on contact with a case, contact with a symptomatic traveler, and travel history were all missing or unknown.

Appendix III - Data dictionary, Source, Format and Answer Categories

Variable Name	Source	Format	Answer Categories
Case identifier number	Statistics Canada	8.0	Continuous value from 1 to 99999999
Region	Public Health Agency of Canada	2.0	1=Atlantic (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador), 2=Quebec, 3=Ontario and Nunavut, 4=Prairies (Manitoba, Saskatchewan, Alberta) and the Northwest Territories, 5=British Columbia and Yukon
Episode week	Public Health Agency of Canada	2.0	Continuous value from 0 to 52, 99=Not stated
Episode year	Public Health Agency of Canada	2.0	Only year 2020 at this point (20), 99=Not stated
Gender	Public Health Agency of Canada	1.0	1=Male, 2=Female, 9=Not stated/Other
Age group	Public Health Agency of Canada	2.0	1=0-19, 2=20-29, 3=30-39, 4=40-49, 5=50-59, 6=60-69, 7=70-79, 8=80+, 99=Not stated
Occupation	Public Health Agency of Canada	2.0	1=Health Care Worker, 2=School or daycare worker/attendee, 3=Long term care resident, 4=Other, 9=Not stated
Asymptomatic	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated
Onset week of symptoms	Public Health Agency of Canada	2.0	Continuous value from 0 to 52, 99=Not stated or Not applicable
Onset year of symptoms	Public Health Agency of Canada	2.0	Only year 2020 at this point (20), 99=Not stated or Not applicable
Symptom - cough	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - fever	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - chills	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - sore throat	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - runny nose	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - shortness of breath	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - nausea	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - headache	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - weakness	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - pain	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - irritability	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - diarrhea	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Symptom - other	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Hospital status	Public Health Agency of Canada	1.0	1=Hospitalized - ICU, 2=Hospitalized - Non-ICU, 3=Not Hospitalized, 9=Not stated/Unknown
Recovered	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated/Unknown
Recovery week	Public Health Agency of Canada	2.0	Continuous value from 0 to 52, 99=Not stated/Not applicable
Recovery year	Public Health Agency of Canada	2.0	Only year 2020 at this point (20), 99=Not stated/Not applicable
Death	Public Health Agency of Canada	1.0	1=Yes, 2=No, 9=Not Stated
Transmission	Public Health Agency of Canada	1.0	1=Domestic Acquisition: "Contact of COVID Case" or "Contact with traveler" or "Unknown Source", 2=International Travel, 9=Not stated/Pending

Appendix IV – Information on the Week Variables, for Year 2020

Week	Concept	Week	Concept	Week	Concept
0	Week of December 29th	18	Week of May 3rd	36	Week of September 6th
1	Week of January 5th	19	Week of May 10th	37	Week of September 13th
2	Week of January 12th	20	Week of May 17th	38	Week of September 20th
3	Week of January 19th	21	Week of May 24th	39	Week of September 27th
4	Week of January 26th	22	Week of May 31st	40	Week of October 4th
5	Week of February 2nd	23	Week of June 7th	41	Week of October 11th
6	Week of February 9th	24	Week of June 14th	42	Week of October 18th
7	Week of February 16th	25	Week of June 21th	43	Week of October 25th
8	Week of February 23rd	26	Week of June 28th	44	Week of November 1st
9	Week of March 1st	27	Week of July 5th	45	Week of November 8th
10	Week of March 8th	28	Week of July 12th	46	Week of November 15th
11	Week of March 15th	29	Week of July 19th	47	Week of November 22nd
12	Week of March 22nd	30	Week of July 26th	48	Week of November 29th
13	Week of March 29th	31	Week of August 2nd	49	Week of December 6th
14	Week of April 5th	32	Week of August 9th	50	Week of December 13th
15	Week of April 12th	33	Week of August 16th	51	Week of December 20th
16	Week of April 19th	34	Week of August 23rd	52	Week of December 27th
17	Week of April 26th	35	Week of August 30th		