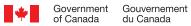
Urban Mobility: Performance Indicators, Transport Canada

Release date: January 18, 2021



Canada

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Urban Mobility: Performance Indicators, Transport Canada

Urban mobility refers to a person's ability to move around the city where they live and work. Congestion on city ¬roads reduces mobility, which is not only an individual inconvenience but also has an economic impact. While the amount of additional time spent in traffic, excess fuel consumed, and other costs of congestion may be large in Canada, the full impact is not known. Using key indicators to evaluate congestion, its cost, and its impact on the economy is the first step to understanding the magnitude of the problem.

To that end, Transport Canada is now using a key mobility indicator - the travel time index or TTI - to track the performance of a series of key urban trade corridors across Canada. Put simply, the TTI is the ratio of actual travel time to the ideal or "free-flow" travel time or, equivalently, the ratio of free-flow speed to actual speed. The travel time index is recommended by the Transportation Association of Canada (TAC) and used by the United States Federal Highway Administration (FHWA).

Key strategic urban trade corridors

Transport Canada and provincial ministries of transport have defined a series of key urban trade corridors in Canada's largest urban areas. The focus is on travel time during the weekday morning peak from 6:00 to 9:59 AM and afternoon peak from 3:00 to 6:59 PM. Note that holidays were not removed from the analysis. The TTI is displayed on maps, in tables and graphically.

Link versus corridor travel times

A corridor consists of a series of links which vary in length from approximately 20 meters to 2 kilometers. A link refers to a specific section of road, such as the length of a city block between two intersections or the stretch of highway between two on- and off-ramps. The TTI can be presented at the link level with a separate value associated to each link for a given month. This format makes it simple to visualize bottlenecks on a corridor and how the index varies over the corridor during a given month. However, link values are more difficult to compare from one month to another.

The TTI can also be presented at the corridor level in tabular and graphical form, but only for a single value per peak period in each direction. To compute a corridor index, the TTI link values along a corridor are aggregated in a way that accounts for traffic volume; for example, a longer and more heavily travelled link contributes more weight. Thus, a single TTI value is calculated for weekday morning and weekday afternoon peak periods per direction on each corridor. While this corridor level allows for an easy month to month comparison, the single value for each peak period will mask traffic details along the corridor, such as locations of bottlenecks for example. In some cases the aggregated value is close to 1.00, as high values are simply off-set by low values.

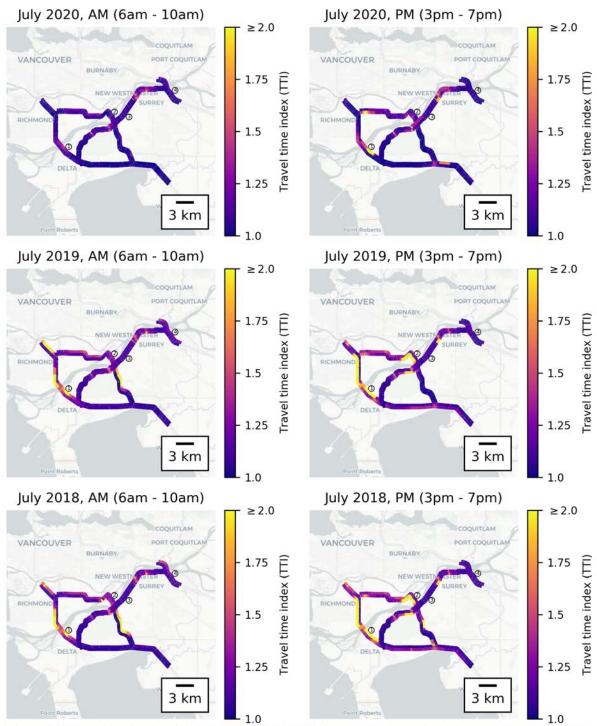
Products

The TTI is available in three formats - maps, tables and charts - each having advantages and limitations. The data used to calculate the indices are supplied by HERE Technologies, a business which collects detailed speed data from Canada's entire road network. The data remain anonymous as vehicle speeds are combined into links and time bins, and available within days of collection.

Vancouver

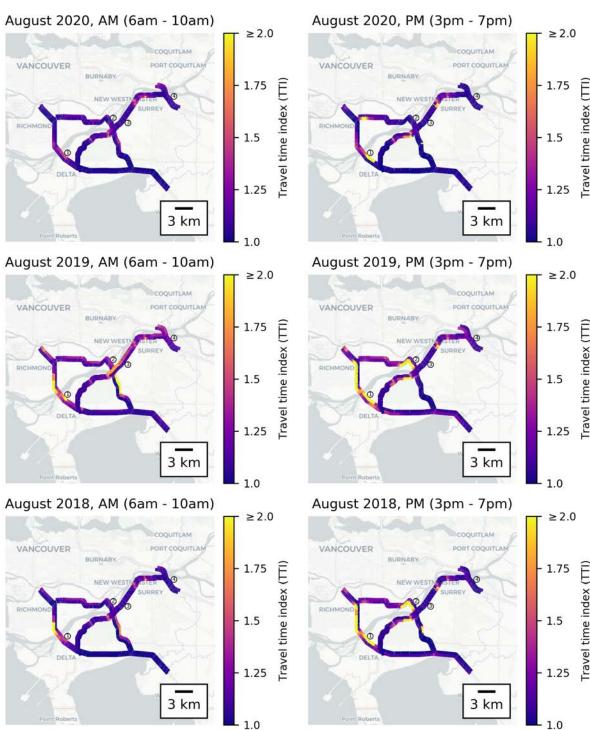
Map 1.1

Travel Time Index, Monday – Friday, by peak period, July 2018, 2019 and 2020, Vancouver, BC



Notes: The Travel Time Index (TTI) is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic.

Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology. Basemaps © OpenStreetMap contributors, © CARTO. Used under Open Database License CC BY-SA.



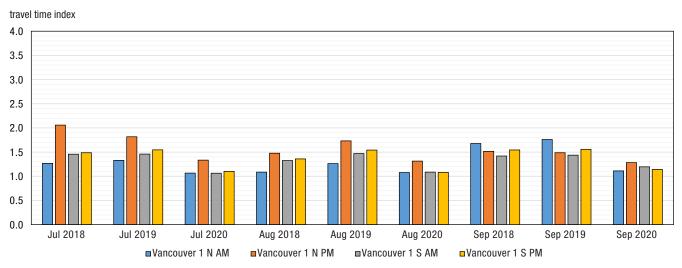
Map 1.2
Travel Time Index, Monday – Friday, by peak period, August 2018, 2019 and 2020, Vancouver, BC

September 2020, AM (6am - 10am) September 2020, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 COQUITLAM COQUITLAM VANCOUVER PORT COQUITLA VANCOUVER PORT COQUITLAM Fravel time index (TTI) 1.75 Fravel time index (TTI) 1.75 1.5 1.5 1.25 1.25 3 km 3 km 1.0 - 1.0 September 2019, AM (6am - 10am) September 2019, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 COQUITLAM COQUITLAM PORT COOUITLAM PORT COOUITLAM VANCOUVER VANCOUVER BURNABY-BURNABY. Fravel time index (TTI) ravel time index (TTI) 1.75 1.75 1.5 1.5 1.25 - 1.25 3 km 3 km 1.0 1.0 September 2018, AM (6am - 10am) September 2018, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 COQUITLAM COQUITLAM VANCOUVER PORT COQUITLAN VANCOUVER PORT COQUITLAN BURNABY. BURNABY. Fravel time index (TTI) Fravel time index (TTI) 1.75 1.75 1.5 1.5 1.25 - 1.25 3 km 3 km 1.0

Map 1.3

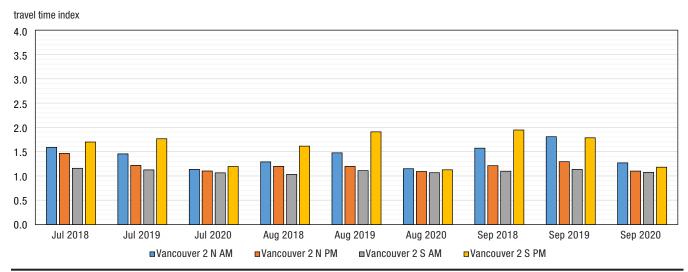
Travel Time Index, Monday – Friday, by peak period, September 2018, 2019 and 2020, Vancouver, BC

Chart 1.1 Travel time index (TTI) on Vancouver 1, July to September 2018-2020



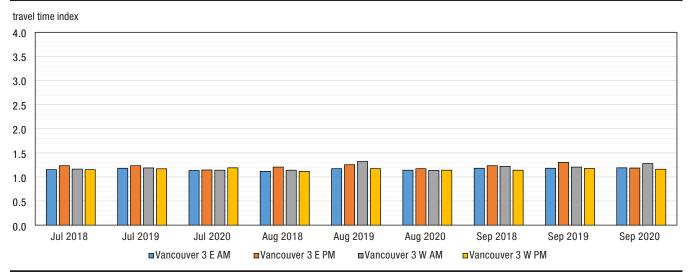
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 1.2 Travel time index (TTI) on Vancouver 2, July to September 2018-2020



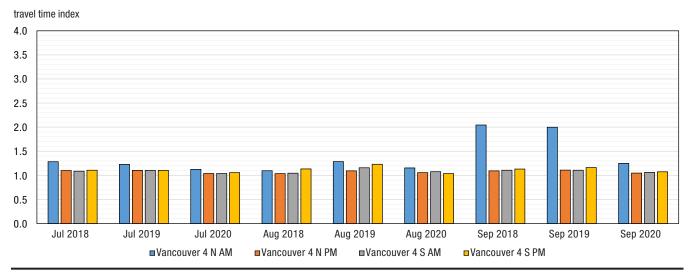
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Chart 1.3
Travel time index (TTI) on Vancouver 3, July to September 2018-2020



Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 1.4
Travel time index (TTI) on Vancouver 4, July to September 2018-2020

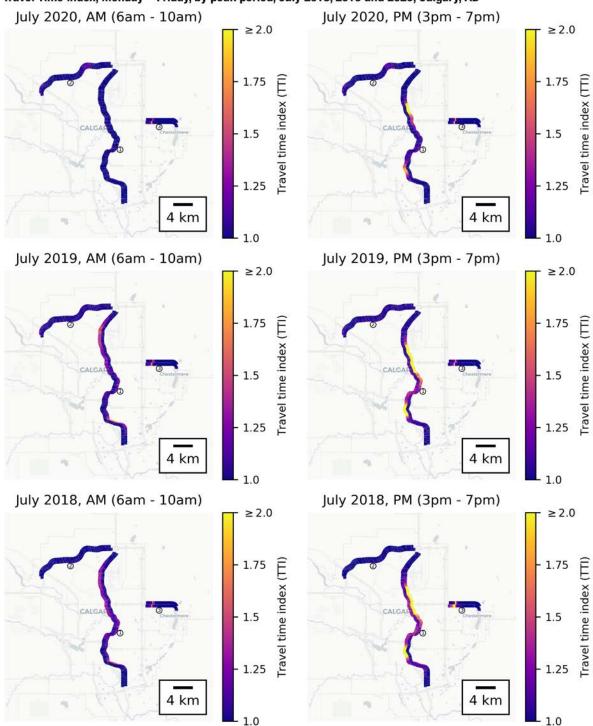


Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Calgary

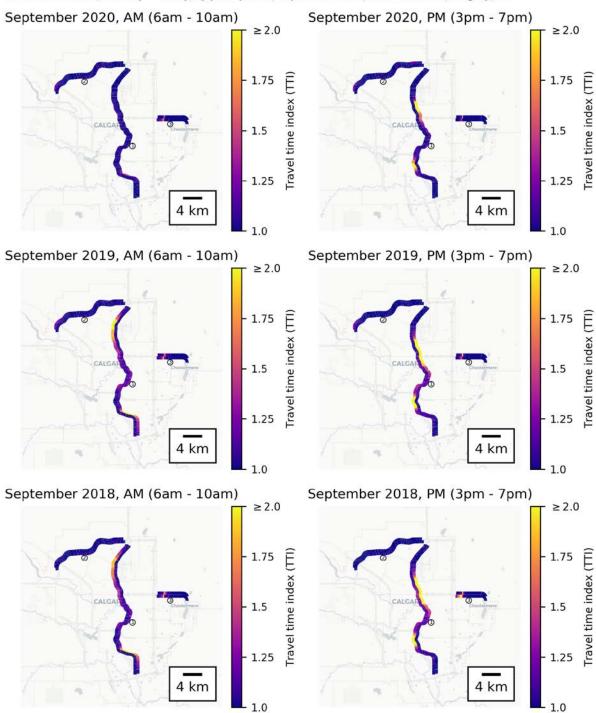
Map 2.1

Travel Time Index, Monday – Friday, by peak period, July 2018, 2019 and 2020, Calgary, AB



August 2020, AM (6am - 10am) August 2020, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.5 - 1.25 1.25 4 km 4 km - 1.0 - 1.0 August 2019, AM (6am - 10am) August 2019, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.25 1.25 4 km 4 km 1.0 1.0 August 2018, AM (6am - 10am) August 2018, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.5 - 1.25 - 1.25 4 km 4 km

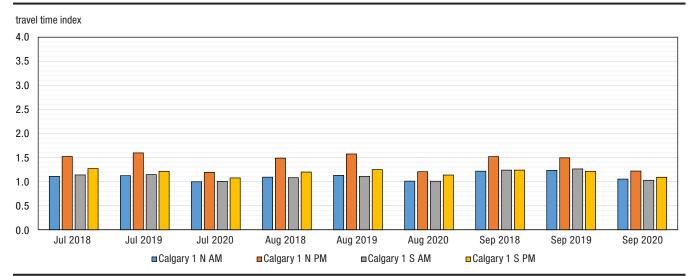
Map 2.2
Travel Time Index, Monday – Friday, by peak period, August 2018, 2019 and 2020, Calgary, AB



Map 2.3

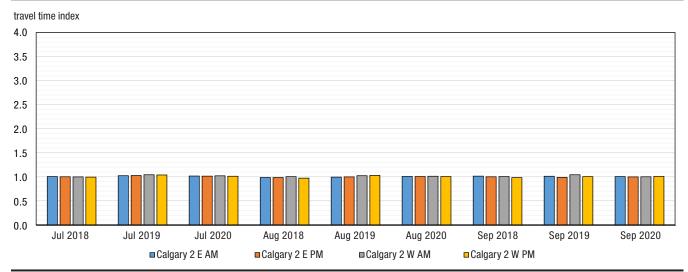
Travel Time Index, Monday – Friday, by peak period, September 2018, 2019 and 2020, Calgary, AB

Chart 2.1
Travel time index (TTI) on Calgary 1, July to September 2018-2020



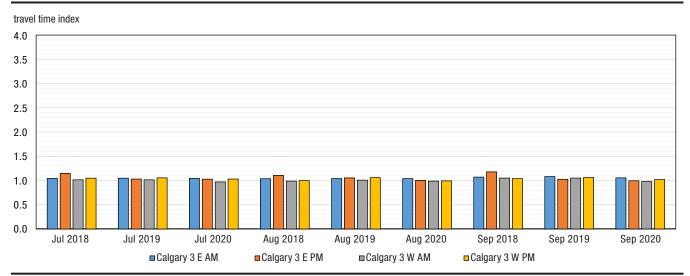
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 2.2 Travel time index (TTI) on Calgary 2, July to September 2018-2020



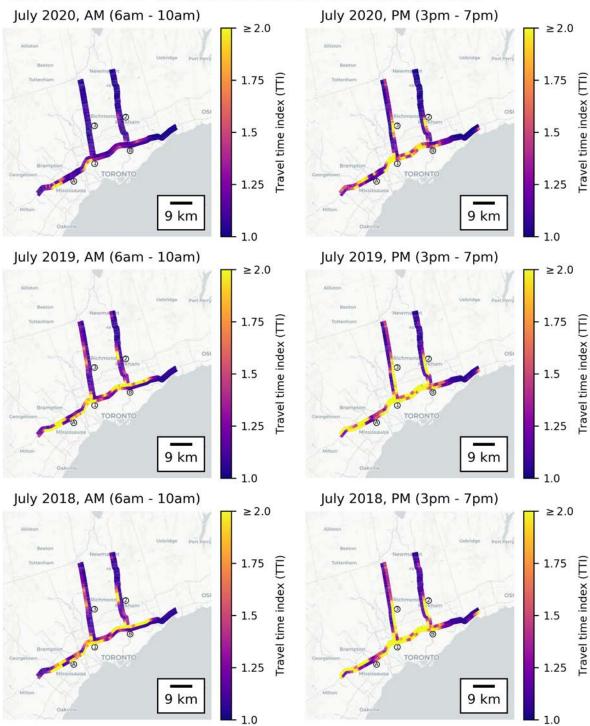
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "PM" refer to the morning and afternoon peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

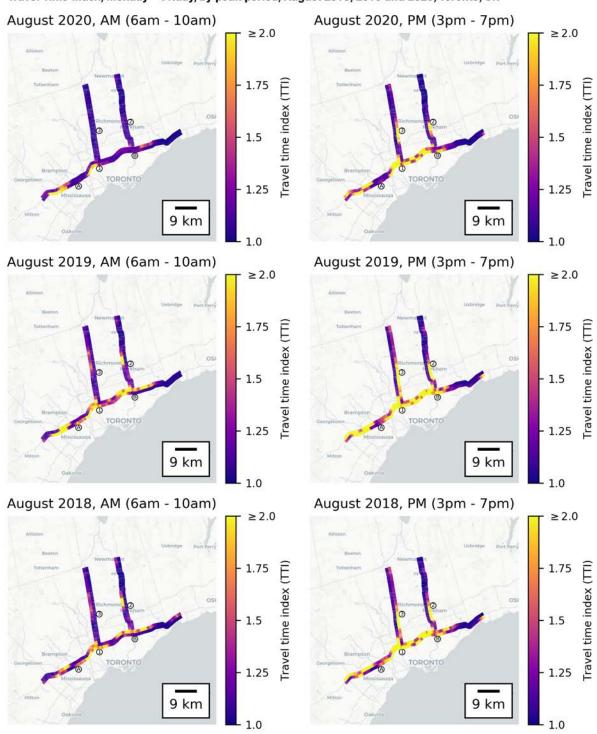
Chart 2.3
Travel time index (TTI) on Calgary 3, July to September 2018-2020



Toronto

Map 3.1 Travel Time Index, Monday – Friday, by peak period, July 2018, 2019 and 2020, Toronto, ON





Map 3.2

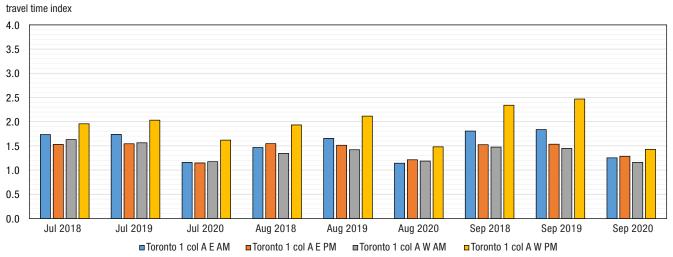
Travel Time Index, Monday – Friday, by peak period, August 2018, 2019 and 2020, Toronto, ON

September 2020, AM (6am - 10am) September 2020, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 - 1.5 - 1.5 - 1.25 - 1.25 9 km 9 km - 1.0 September 2019, AM (6am - 10am) September 2019, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.5 1.25 - 1.25 9 km 9 km 1.0 - 1.0 September 2018, AM (6am - 10am) September 2018, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 - 1.75 1.75 1.5 1.5 - 1.25 1.25 9 km 9 km 1.0

Map 3.3

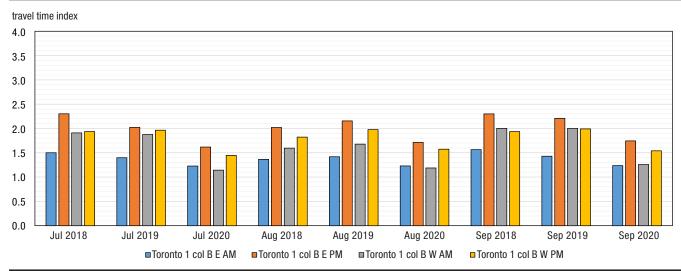
Travel Time Index, Monday – Friday, by peak period, September 2018, 2019 and 2020, Toronto, ON

Chart 3.1
Travel time index (TTI) on Toronto 1 col A, July to September 2018-2020



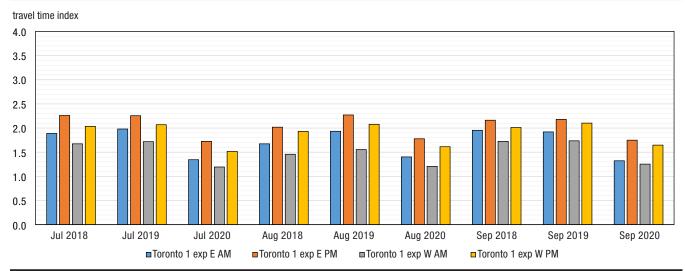
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 3.2
Travel time index (TTI) on Toronto 1 col B, July to September 2018-2020



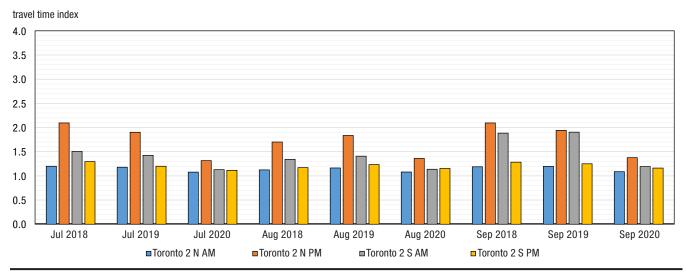
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Chart 3.3
Travel time index (TTI) on Toronto 1 exp, July to September 2018-2020



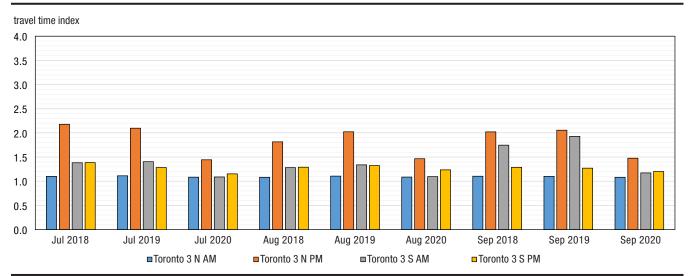
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology

Chart 3.4
Travel time index (TTI) on Toronto 2, July to September 2018-2020



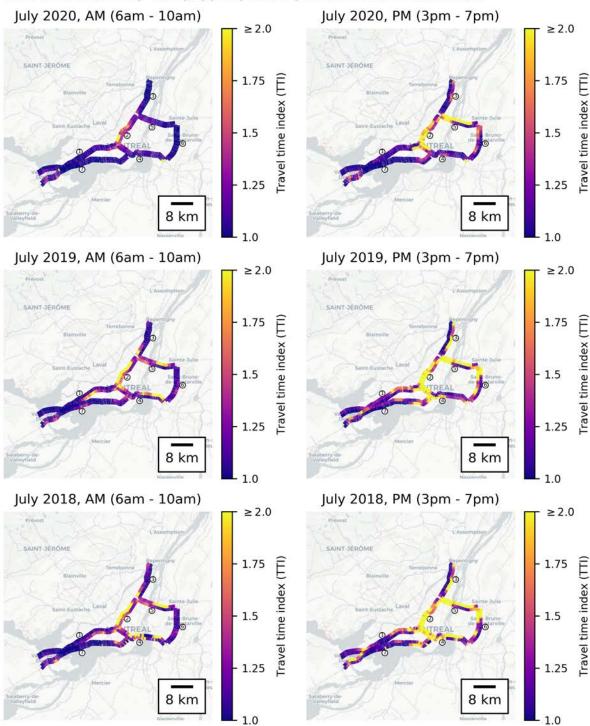
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Chart 3.5 Travel time index (TTI) on Toronto 3, July to September 2018-2020



Montréal

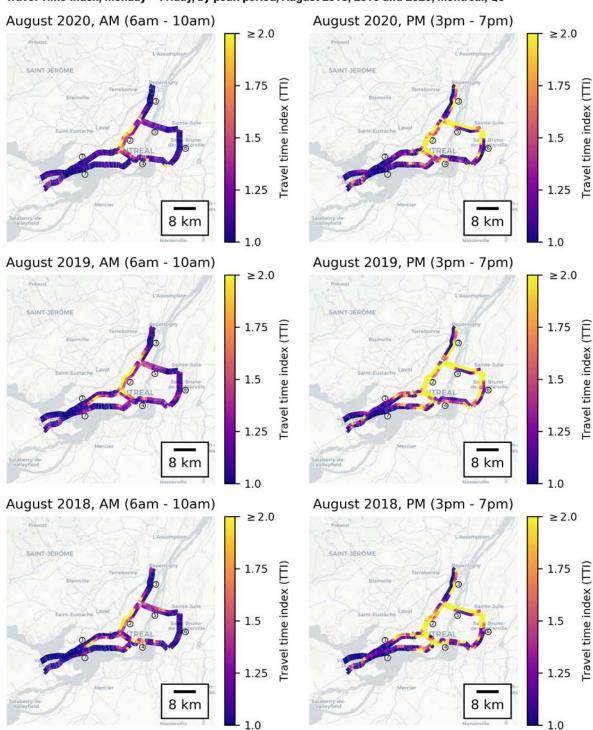
Map 4.1 Travel Time Index, Monday – Friday, by peak period, July 2018, 2019 and 2020, Montréal, QC



Notes: The Travel Time Index (TTI) is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic.

Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology. Basemaps © OpenStreetMap

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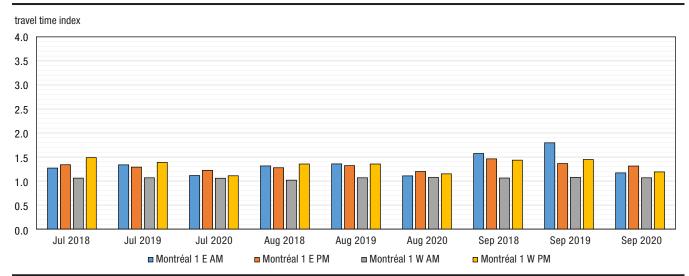


Map 4.2 Travel Time Index, Monday – Friday, by peak period, August 2018, 2019 and 2020, Montréal, QC

September 2020, AM (6am - 10am) September 2020, PM (3pm - 7pm) ≥ 2.0 1.75 1.75 Travel time index 1.5 1.5 1.25 1.25 8 km 8 km 1.0 1.0 September 2019, AM (6am - 10am) September 2019, PM (3pm - 7pm) ≥2.0 ≥ 2.0 SAINT-JERÔME SAINT-JEROMI 1.75 1.75 **Fravel time index** 1.5 1.5 1.25 1.25 8 km 8 km 1.0 September 2018, AM (6am - 10am) September 2018, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 SAINT-JÉRÔME SAINT-JEROME Travel time index (TTI) 1.75 Travel time index (TTI) 1.75 1.5 - 1.5 - 1.25 - 1.25 8 km 8 km

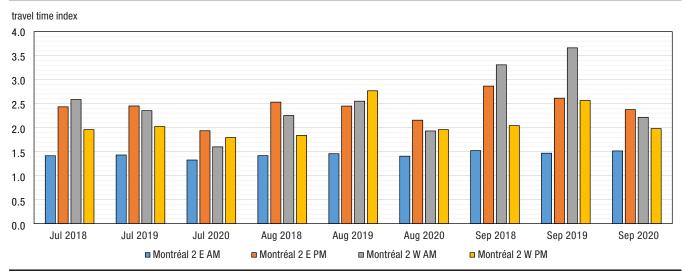
Map 4.3
Travel Time Index, Monday – Friday, by peak period, September 2018, 2019 and 2020, Montréal, QC

Chart 4.1 Travel time index (TTI) on Montréal 1, July to September 2018-2020



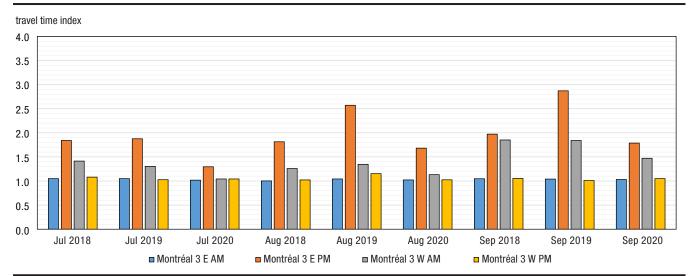
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 4.2 Travel time index (TTI) on Montréal 2, July to September 2018-2020



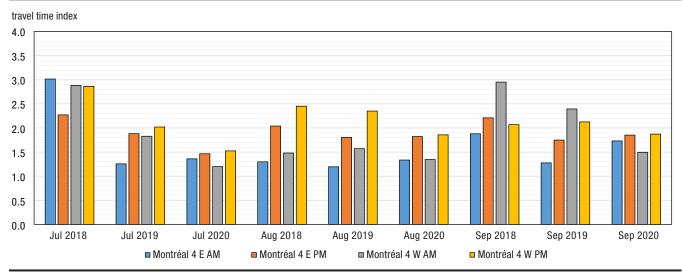
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Chart 4.3 Travel time index (TTI) on Montréal 3, July to September 2018-2020



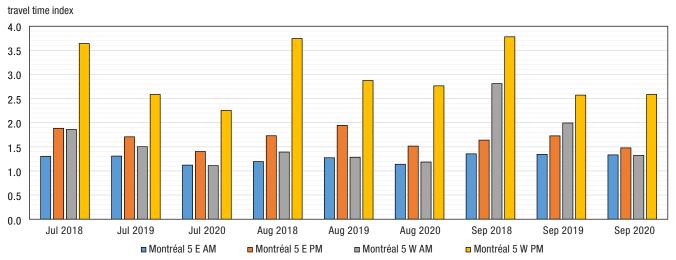
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 4.4 Travel time index (TTI) on Montréal 4, July to September 2018-2020



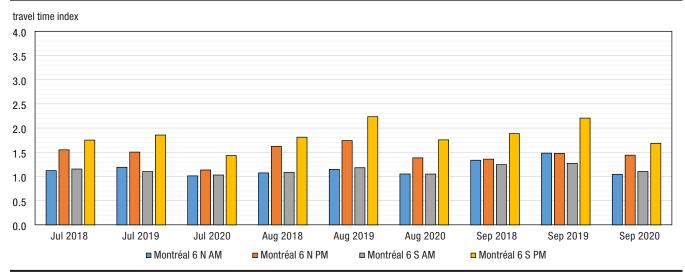
Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "PM" refer to the morning and afternoon peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

Chart 4.5
Travel time index (TTI) on Montréal 5, July to September 2018-2020



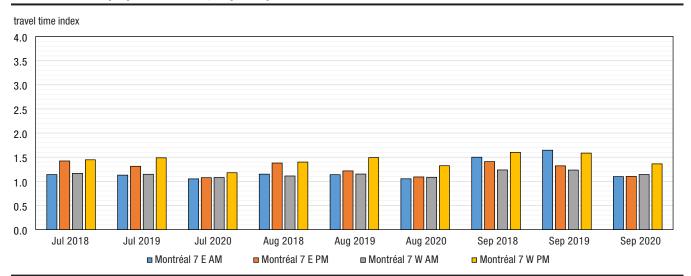
Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 4.6 Travel time index (TTI) on Montréal 6, July to September 2018-2020



Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "S", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "AM" and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.

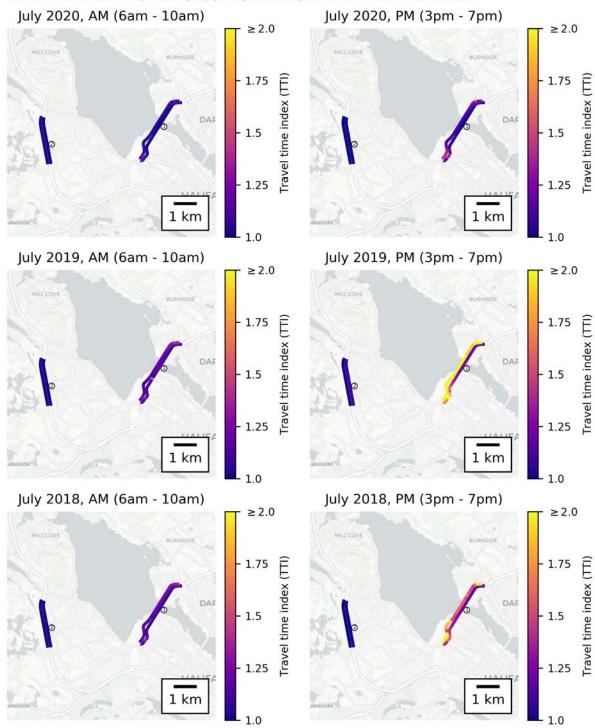
Chart 4.7 Travel time index (TTI) on Montréal 7, July to September 2018-2020



Halifax

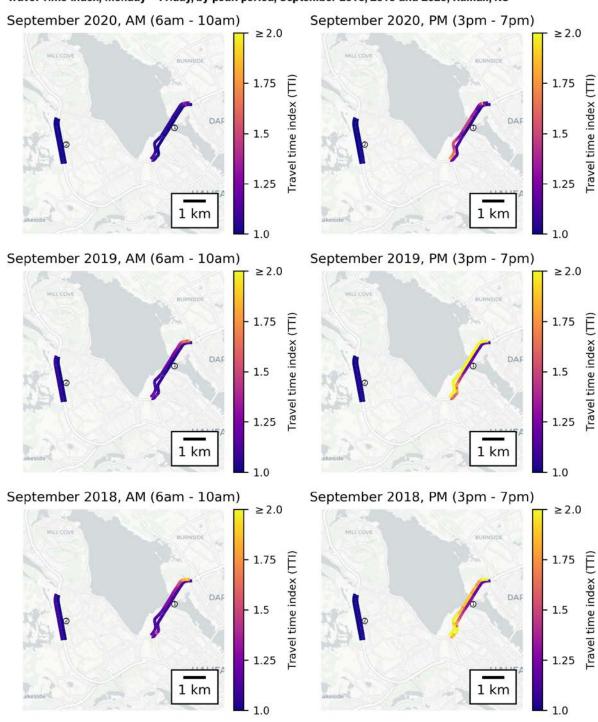
Map 5.1

Travel Time Index, Monday – Friday, by peak period, July 2018, 2019 and 2020, Halifax, NS



August 2020, AM (6am - 10am) August 2020, PM (3pm - 7pm) ≥ 2.0 ≥2.0 1.75 1.75 Travel time index 1.5 1.5 1.25 1.25 1 km 1 km August 2019, AM (6am - 10am) August 2019, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.25 1.25 1 km 1 km 1.0 1.0 August 2018, AM (6am - 10am) August 2018, PM (3pm - 7pm) ≥ 2.0 ≥ 2.0 1.75 1.75 1.5 1.5 1.25 1.25 1 km 1 km

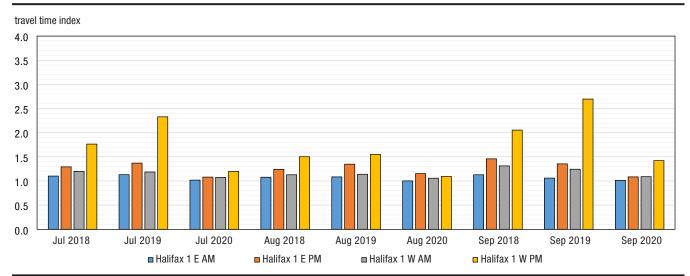
Map 5.2
Travel Time Index, Monday – Friday, by peak period, August 2018, 2019 and 2020, Halifax, NS



Map 5.3

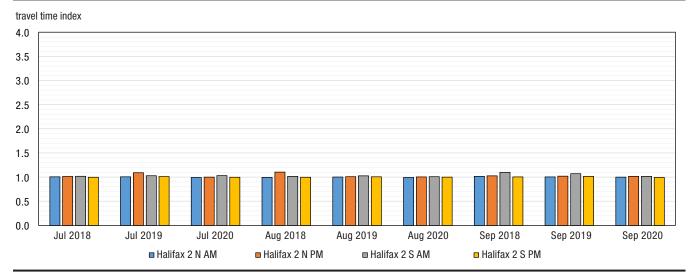
Travel Time Index, Monday – Friday, by peak period, September 2018, 2019 and 2020, Halifax, NS

Chart 5.1
Travel time index (TTI) on Halifax 1, July to September 2018-2020



Source: HERE Technologies Traffic Analytics data, methodology developed by Transport Canada based on Texas A&M methodology.

Chart 5.2 Travel time index (TTI) on Halifax 2, July to September 2018-2020



Notes: The TTI is the ratio of peak period travel time to free-flow travel time. For example, a TTI of 2.00 means a trip would take twice as long during the peak period as the same trip in free-flow conditions. A TTI of 1.00 represents free-flowing traffic. "N", "E" and "W" refer to the northbound, southbound, eastbound and westbound directions on the corridor(respectively), and "PM" refer to the morning and afternoon peak periods (respectively). The morning peak period is defined from 6:00 AM to 9:59 AM, and the afternoon peak period is defined from 3:00 PM to 6:59 PM.