

**TECHNICAL DOCUMENTATION
VISITORVIEW TOURISM SUITE**

JUNE 2025

EXECUTIVE SUMMARY

- Estimates count of trips and nights from domestic, US and international travellers, as well as count of domestic visitors
- Monthly, quarterly, seasonal, and yearly estimates updated monthly with a lag of one month, e.g., March data available end of April
- Data reported as origin-destination pairs, as defined by combinations of
 - Origins: dissemination area (Canada), block group (US), and country (International) levels
 - Destinations: CSD, CD, CMA, TRC, PR, and National levels for all origins, as well as requested custom regions
- Captures overnight visitors in Canada, with Canadian devices required to be over 40km from their home neighbourhood
- International and US travellers are weighted to match Frontier Counts volume, while weights for domestic travellers are derived from weighting domestic devices to DemoStats base population

WHAT IT IS

We're proud to introduce the VisitorView Tourism Suite (VVTS)—a leading solution for analyzing and understanding visitor travel patterns across Canadian destinations. Designed for tourism organizations, municipalities, event venues, retail centers, and other sectors invested in Canadian tourism, VisitorView provides actionable insights to support strategic planning and enhance the visitor experience.

VisitorView utilizes privacy-compliant, anonymized mobile location data, enriched with third-party datasets and advanced analytics, to generate neighbourhood-level estimates of overnight visitors within and to Canada. The product covers a wide range of geographic areas, including provinces, census divisions and subdivisions, metropolitan areas, and tourism regions.

Users can explore detailed metrics such as the number of visitors, trips taken, and nights spent in each destination, with the ability to compare current trends to historical travel behaviour.

HOW IT WAS BUILT – KEY DATA SOURCES

- Cellular network-derived mobile movement data
- [Statistics Canada Frontier Counts](#)
- [Statistics Canada Visitor Travel Survey](#) (both 2019 and 2018 are utilized)
- PRIZM
- Claritas PopFacts
- PRIZM Premier
- Crowd-sourced consent-based SDK (app) mobile movement data

HOW IT WAS BUILT – MODELLING PROCESS

Trip Diary Creation

The definition of a visitor in this product is an overnight visitor. For US and international devices, these devices must be observed during nighttime hours. Canadian devices must be observed overnight more than 40km away from their home location. Essential to this is the definition of a Daily Common Evening Location (DCEL). DCELS are assigned based on the destination area with the device's most consistent cell connection during nighttime hours of 6PM – 7AM.

Once daily CELs have been calculated, they must meet a quality threshold. To be considered an overnight visitor, the device must be observed for a minimum of two calendar days. For Canadian devices, the device must be observed at least 40km from their home location to qualify as an overnight visitor, which aligns with industry standards.

Daily CELs are chained together into a trip diary. Not all devices produce data daily. In some cases, missing nights are probabilistically imputed. In other cases, if the gap between observed days is large enough (US/INTL) or if the device registers a DCEL location at their home H3 (CA), it is deemed to be two separate trips. The appropriate size of the gap between observed days for international trips is determined based on the median trip length reported to the same destination in the Visitor Travel Survey (VTS).

Some devices have a high volume of trips or stay in destinations longer than expected for a visitor. Various trip repetition thresholds and maximum trip lengths are implemented to avoid overcounting these non-tourism visitors:

- **US:** If there are more than 9 trips in the preceding 12 months, the 10th, 11th, etc. are not counted. If there are more than 4 trips in a given month, the 5th, 6th, etc. are not counted.
- **International:** If there are more than 6 trips in the preceding 12 months, the 7th, 8th, etc. are not counted. If there are more than 4 trips in a given month, the 5th, 6th, etc. are not counted.
- **CA:** If there are more than 12 trips in the preceding 12 months, the 13th, 14th, etc. are not counted.
- **US/International:** Trips longer than 30 days are removed.
- **CA:** Trips longer than 21 days are removed.

Population Weighting

This product uses two separate weighting methodologies for Canadian and International/US devices due to the difference in available origin data and control totals. It is important to note that since Frontier Counts reports only trips and nights metrics, US and International data are weighted to trips, as opposed to the visitor-based weighting seen in the Canadian data.

In the Canadian data, the monthly common evening location of a device (MCEL) is calculated from an aggregation of daily and weekly CELs. Devices that retain a consistent H3 for 20 out of the 24 weeks prior to a given month are determined to be good quality devices (GQD) and are assigned an MCEL. VVTS then implements a spatially smoothed population weighting procedure, where devices among neighbouring DAs can share weights and travel behaviours as a function of distance and social demographics. This acts as one of our Privacy by Design technologies.

In the US and International products, all detected trips are weighted to the Frontier Counts based on province of entry. This is represented in the raw mobile data as being the first province in which a device was observed during their trip.

US Origin Assignment (US only)

As US devices taking overnight trips are only observable within Canada, origin-level data in the US is modelled through a matching and probabilistic method using various data sources. We assign a probable origin using three stages and employ the VTS, Claritas Pop Facts, PRIZM Premier, and historical SDK (app) data.

To enhance the origin assignment methodology from prior estimates in VVUS, a larger and more representative sample of travel data was created using the VTS (with an additional year of data from 2018), license plate data from Frontier Counts, and post-processing modelling. Further matching techniques were

also developed, resulting in twice as many origin state assignments in certain geographies, improving overall volume and quality.

Step	Data Sources	Assignment Level	Method
1	VTS 2018, 2019	State	Detected device trips are proportionally allocated to origin states based on trip characteristics such as season, trip length, province of entry, and destination TRC. Proportional origin state ranking will not always match the VTS, because the trip characteristics and similarity to reported VTS trips will determine which states are appropriate to be assigned.
2	6 years of SDK (app) data	County	Within origin states, SDK data is used to proportionally allocate trips down to the county level. This allocation is based on the similarity of trip characteristics between detected cellular device trips and detected SDK device trips.
3	Claritas PopFacts and PRIZM Premier	Block group	Within origin counties, trips are allocated to the block group level based on PRIZM Premier and population distribution.

Privacy by Design Application and Aggregations

In alignment with Privacy by Design (PbD) best practices, data is only released if the risk of reidentification is under 5% at an origin geography, and 10% or less at the destination.

These PbD rules are initially applied at the Census Subdivision level before being directly rolled up to the Census Metropolitan Area and Census Division. Additional PbD rules are then applied at key higher-level geographies (Tourism Regions, Provinces) to increase the amount of data available without revealing any underlying data. As a result, the comparison of values across nesting geographies may not necessarily nest perfectly.

Data is finally aggregated into various temporal aggregation periods, including month, quarter, season, and year. Season, a new addition to VisitorView, is defined as such:

- S01/Winter: December of the previous year until March of the current year, inclusive
- S02/Spring: April until June, inclusive
- S03/Summer: July until August, inclusive
- S04/Fall: September until November, inclusive

UPDATE SCHEDULE

VVTS is updated monthly. New monthly updates will lag by approximately 1 month from the current month to allow for identification of monthly common evening locations for Canadian devices as well as the availability of the Statistics Canada Frontier Counts data for International and US weighting.

Note that International and US weights for the newest available month will be initial estimates as weights for that month are calculated using the preliminary Leading Indicator statistic in the Frontier Counts database. Canadian weights for the newest available month will also be initial estimates. Although closer to the final number, unfinished trips will be posted in the following update. This is because a trip is counted when it ends, so trips leading into the next month will be updated in the subsequent release.

GLOSSARY OF KEY TERMS

- **Uber H3s / H3s** - A spatial indexing system based on a hexagonal grid.
- **Common Evening Location (CEL)** - The dominant overnight location(s) captured for a specific device over a specified period of time.
- **SDK Mobile Movement Data** - Anonymized location information collected from mobile apps that use a Software Development Kit (SDK).