

1. INTRODUCTION

As part of MHTIS, the Urban Mobility and Transportation Informatics Group (UMTIG) manages a Web-based application (i.e., a Web App) to disseminate traffic information. This website facilitates ready use of the MHTIS for various branches within local, provincial, and federal governments, transportation engineering researchers, other professionals, and the general public. Providing open access to traffic information enhances understanding of the geographic and temporal traffic characteristics on Manitoba's road network and promotes effective transportation planning, programming, regulating, and investment decision-making. This document describes how to use the MHTIS Web App.

2. MHTIS WEB APP

2.1 Software

ESRI's AGOL is the platform hosting the new MHTIS Web App and the associated spatial data layers. The Web App can be accessed at the following link:

<https://univmb.maps.arcgis.com/apps/webappviewer/index.html?id=bc528943383c41939c4d1ecb97be1bc6>

2.2 Data

The MHTIS Web App leverages ESRI's built-in base map functionality to provide detailed location data for all of Manitoba. The MHTIS Web App does not feature any customized geographic databases. Instead, all data layers in the MHTIS Web App relate to the traffic monitoring program. There are four layers in the current version of the MHTIS Web App.

Traffic Counting Stations

This is a point feature layer showing the location of the traffic counting stations in Manitoba, including permanent count stations (PCS), coverage count stations (CCS), and town count stations (TOW). Hyperlinks in the pop-up attribute table link to additional count station information for all PCS and CCS.

Intersection Turning Movement Count Locations

This is a point feature layer showing the location of intersection turning movement counts conducted since 2000. Additional information is provided in the attributes of each point (i.e., intersection location) in PDF form.

Traffic on Manitoba Highways

This is a polyline feature layer showing the most recent MHTIS estimate of annual average daily traffic (AADT) on the Manitoba highway network. Line thicknesses denote AADT ranges for each homogeneous traffic segment (referred to as a sequence in the database). This layer is developed using a sequenced linear referencing system (LRS) developed by UMTIG for MHTIS. This layer does not yet incorporate MTI's most recent LRS.

Truck Traffic on Manitoba Highways

This is a polyline feature layer showing the most recent MHTIS estimate of annual average daily truck traffic on the Manitoba highway network. Line thicknesses denote AADTT for each homogeneous truck traffic segment. Pop-up attribute tables provide detailed truck traffic estimates by FHWA vehicle classes 4-13.

Manitoba Road Network

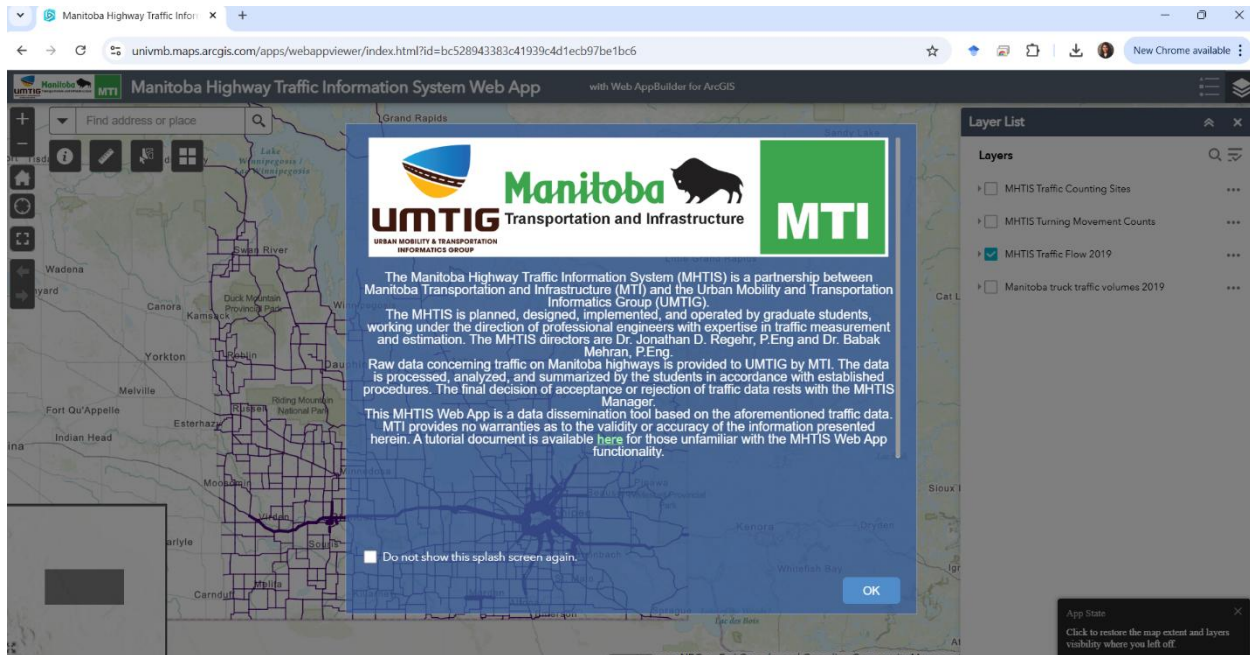
This is a polyline feature showing the LRS developed by UMTIG for MHTIS. This layer does not yet incorporate MTI's most recent LRS. Road sections are colour-coded to reflect the highway type: Provincial Trunk Highway, Provincial Road, Access Road, or Other. This spatial data layer is available online and is presented, unmodified, as a reference.

3. BASIC MHTIS WEB APP FUNCTIONS

ESRI's AGOL provides multiple tools and options for viewing, disseminating, and interacting with spatial data files. The MHTIS Web App features a user interface that is compatible with smartphone, tablet, and computer displays. Note that the resolution of your device will dictate the exact layout of the MHTIS Web App, but the functions described below are universal.

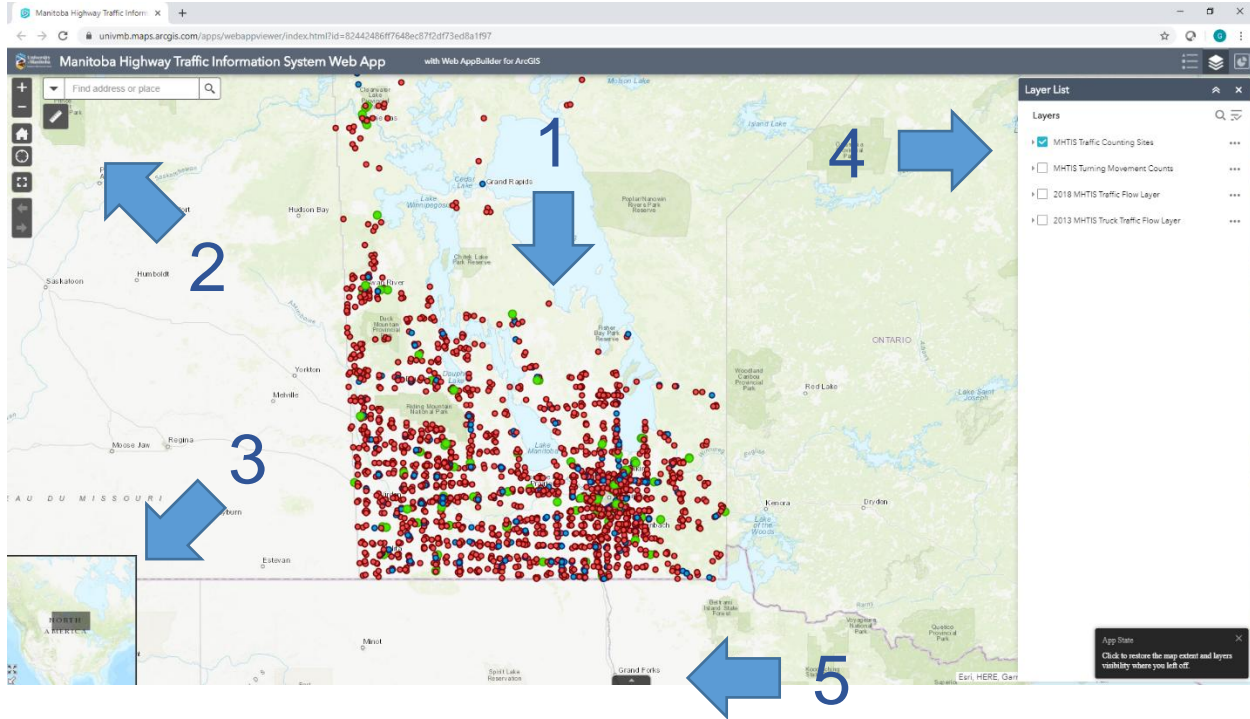
Welcome Screen

Upon opening the MHTIS Web App, a splash screen will appear with the UMTIG logo and a description of the MHTIS data analysis procedure.



The splash screen also includes a link to this tutorial for reference and a checkbox to suppress the splash screen on future visits to the MHTIS Web App.

By default, the MHTIS Web App layout is as shown below.



This section will describe each aspect of the default layout.

1. Viewing space

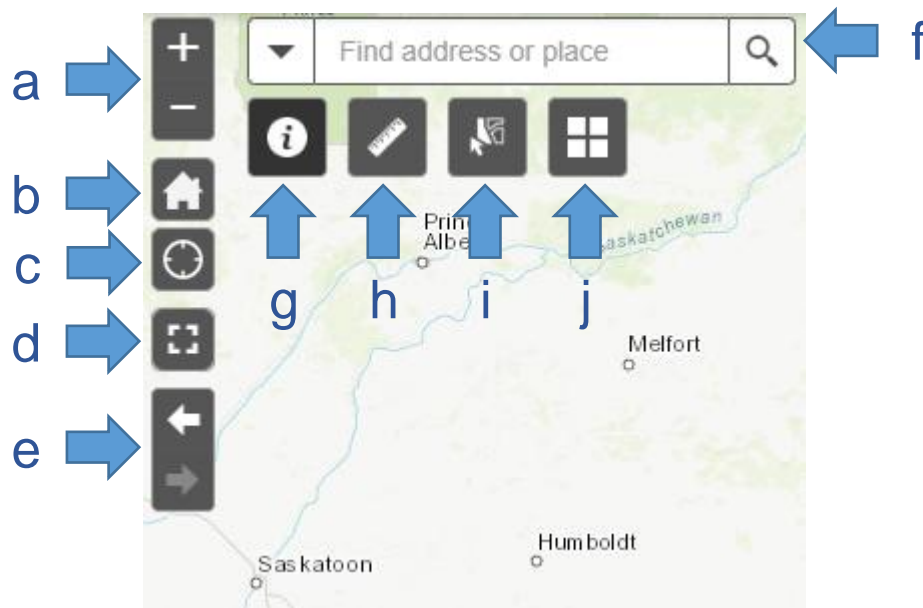
The viewing space comprises a majority of the MHTIS Web App window. Users can manipulate this viewing space using their mouse. Hold shift + click to zoom to a rectangular area.

Features in the viewing space can be interacted with. Clicking at any location will open up a popup table with detailed information about any features concurrent with the selected location. For certain layers, the popup table will contain attached documents in PDF form which contains detailed traffic data. Triangles in the upper-right corner are used to pan between multiple features if more than one exists at the clicked location.

MHTIS Traffic Counting Site	
Station Number	16
Flow Direction	C
Location	3.7 KM N. OF P.T.H.
Description	#17
Region	2
Highway Number	7
Highway Alternate	
Section	040
Sequence	010
Counter Type	PCS
Station Type	PCS
Device Type	PCS
Traffic Pattern Group	PG2
Parent Station	0
	Zoom to

2. Tools and view manipulation

The tools in the upper-left corner of the MHTIS Web App are primarily used to adjust the map extents shown in the viewing space.



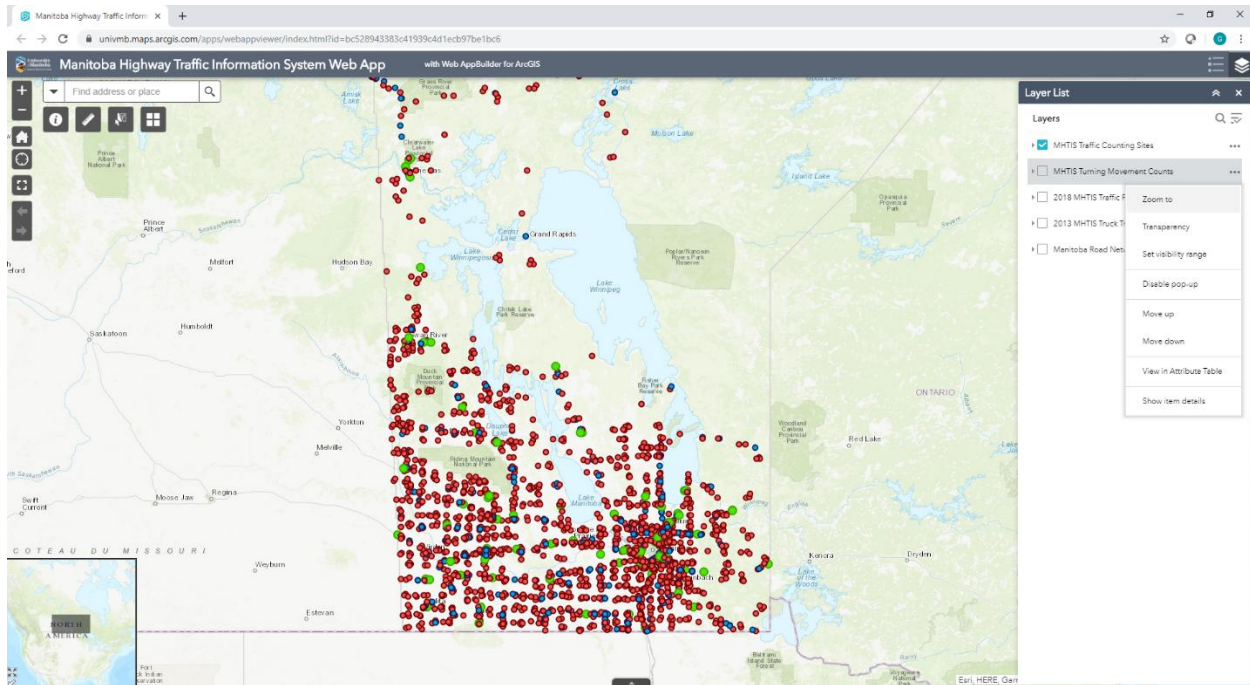
- a. Zoom in/zoom out.
- b. Return to default map extent.
- c. Zoom to user's location (note that the user must allow the browser access to their location).
- d. Expand the viewing space to full screen.
- e. Return to previous/next map extent
- f. Search for location. A dropdown menu allows users to search for locations in either the MHTIS count station database or the ESRI geocoded location database. The ESRI database includes places of interest, addresses, and geographic locations.
- g. About tool. This opens a popup with the same information as the splash window, including a link to this tutorial document.
- h. Measurement tool. This tool allows users to measure distance, area, or geographic coordinates.
- i. Select Feature tool. This tool allows users to select features in the viewing space. This is useful for selection interactions in the attribute table (see below).
- j. Basemap Gallery tool. This tool allows users to change the basemap underlying the MHTIS spatial data layers.

3. Map extents window

This inset map shows the current map extents in the context of the surrounding area. The inset map scales with the current map scale. Users can move the viewing space map extent by clicking and dragging the gray rectangle on the inset map. The inset map can be minimized by clicking the arrow in the bottom-left corner.

4. Layer list panel

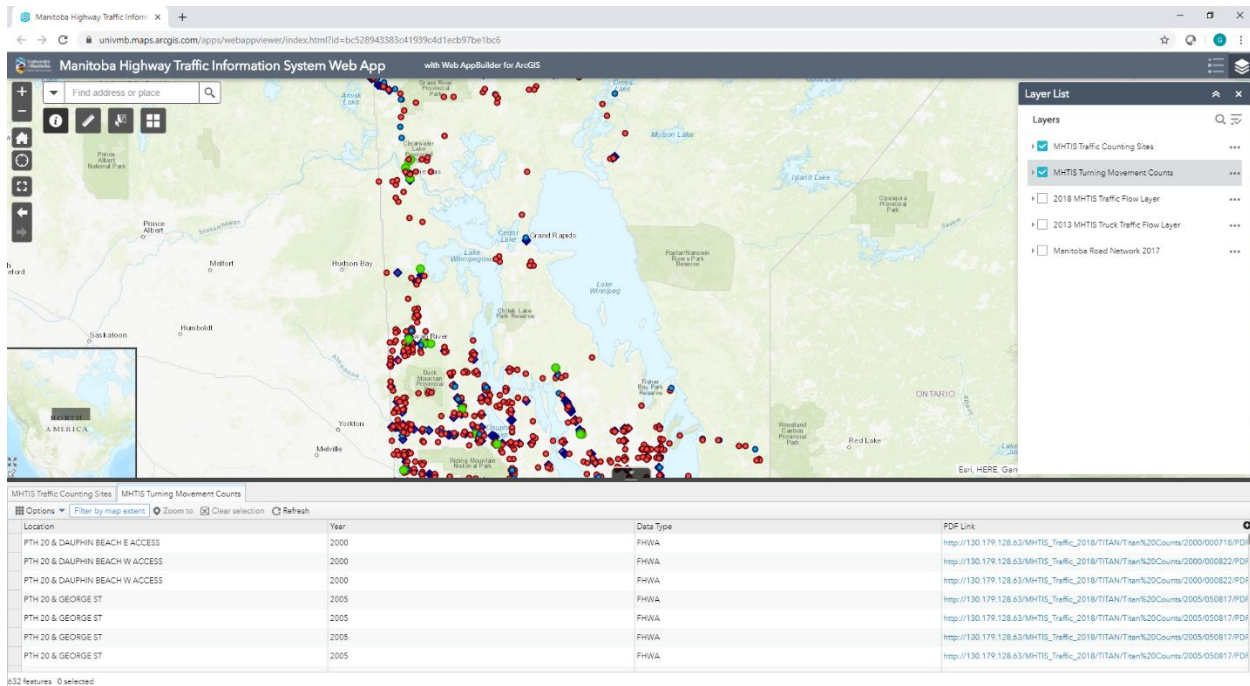
The panel on the right side of the map shows a list of available geospatial layers, by default. Layers can be activated and de-activated by selecting the checkmark beside each layer. An options menu on the right side of each layer allows users to adjust the layer's visibility and transparency in the viewing space, disable pop-ups, and open the attribute table.



Buttons in the upper-right corner of the panel allow the user to minimize or close the panel. Widgets in the upper-right corner of the MHTIS Web App adjust what is shown in the panel (either Legend or Layer List).

5. Attribute Table

The tab on the bottom of the viewing space opens/closes an attribute table panel.



Attribute tables for all active layers are shown as tabs at the top of the attribute table panel. These tables can also be activated for each layer by selecting “View in Attribute Table” in the layer’s options menu (accessed by clicking the ellipsis beside any layer in the layer panel).

	Year
	2003
	2003
PTH 1A & 24TH ST W	2006
PTH 1A & 24TH ST W	2006
PTH 1A & 24TH ST W	2010
PTH 1A & 24TH ST W	2010
PTH 1A & 4TH ST NW	2006

The attribute table allows users to see a list of details for all features within a spatial data layer. Features can be selected by clicking on the grey rectangle on the left of any single feature. Selected features will be highlighted in blue in the viewing space and in the table panel. Multiple features can be selected by holding the Ctrl key while clicking on multiple features or using the Shift key to select a group of features. There are also tools within the table panel for advanced data manipulation.

- The “Options” tab lets users switch the table panel view between all features and selected features only. The options tab also allows users to filter features and adjust visible fields.
- The “Filter by map extent” button toggles the table panel between showing all features in the layer and only those that are visible in the map window.
- The “Zoom to” button moves the map extents to zoom into selected features.
- The “Clear selection” button clears all selected features from the table.
- The “Refresh” button updates the data in the table. This does not apply to data hosted in the MHTIS Web App.

Filtering data based on attributes

The “Filter” option in the attribute table allows users to refine the features shown in the viewing space using user-defined queries. Multiple expressions can be applied at once, if needed.

In this example, the Turning Movement Count Layer has been filtered to show features based on two conditions: the count year must be 2014 or later, and the location must include PTH 101. In this way, the query displays all features (i.e., counts) conducted on this highway for this time period and all other features are hidden from the viewing space.

The screenshot shows the Manitoba Highway Traffic Information System Web App interface. The map displays Winnipeg, Manitoba, with several blue diamond markers indicating turning movement count locations along PTH 101. The Layer List on the right side of the map shows the following layers:

- MHTIS Traffic Counting Sites
- MHTIS Turning Movement Counts
- 2018 MHTIS Traffic Flow Layer
- 2013 MHTIS Truck Traffic Flow Layer
- Manitoba Road Network 2017

Below the map, the 'MHTIS Turning Movement Counts' table is displayed with the following data:

Location	Year	Data Type	PDF Link
PTH 101 & PR 204 N JCT	2014	Misvision	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2014/140001/PDF
PTH 101 & PR 204 S JCT	2014	Misvision	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2014/140001/PDF
PTH 101 & PR 221 E INTERSECTION	2014	CTP	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2014/140001/PDF
PTH 101 & PR 221 E INTERSECTION	2014	CTP	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2014/140001/PDF
PTH 101 & PR 221 W INTERSECTION	2014	CTP	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2014/140001/PDF
PTH 101 & PTH-190	2015	CTP	http://130.179.128.63/MHTIS_Traffic_2018/TITAN/TrafficCounts/2015/150001/PDF

22 features 0 selected