January 2025

Dear Participants,

Welcome to the 2025 Higher Education Analytics Data Competition.

Please find included in this package information on the problem to be addressed and how to acquire datasets for Phase One of the competition. For instructions and details on competition rules and how to submit posters for the competition, please refer to the competition website (**https://datacompetition.mohawkcollege.ca**). Links to reference templates for submissions are available on the website as well. An electronic poster submission sized **48" x 27"** in PDF format (landscape orientation) is required.

Please remember that this is a student competition. Mentors are available to provide guidance and recommendations, but all analysis should be performed by student participants.

For Phase Two of the competition, qualifying teams will be provided with more details as the date approaches.

Best of luck to all the teams!

Sincerely,
HEAD Competition Organizing Committee

PROBLEM – PHASE ONE

TITLE: EXPLORING TRANSPORTATION CONNECTIVITY IN THE CITY'S TRANSPORTATION NETWORK

BACKGROUND

Project Statement: *This case study involves the transportation network exploration and analysis of the streets and sidewalks in the City of Hamilton, where students can apply analytics to real-world, complex scenarios. This challenge considers urban planning, transportation logistics, retail strategy, citizen equity, and more. Using data and analytics, students can make informed, data-driven decisions at the heart of business decision-making processes.*

Hamilton's urban, suburban, and rural communities have various levels of transportation connectivity, and major routes connect these communities from east to west and north to south.

The City of Hamilton along with many other municipalities has a desire to build communities that include an active transportation network with a high standard of integration among various transportation modes offering safe and convenient access for individuals to meet their daily needs. Ultimately, optimally designed transportation network connectivity promotes walkability, enhances public health, reduces traffic congestion, and creates a more sustainable and livable environment.

Geospatial data is one tool for understanding the current connectivity of the City's transportation network, including streets, sidewalks, trails, and cycling infrastructure.

The goal of this project is to analyze the City's transportation data to visualize and calculate the connectivity of transportation assets among the City's communities. By building knowledge about transportation network connectivity, the public can be encouraged to use alternate forms of transportation such as walking or cycling within their community which supports the City's healthy community strategic objectives to promote alternative modes of transportation.

How can the City's transportation data be converted into useful information to allow for the City and the public to understand the connectivity among all communities and Wards, including access to focal points that are important to daily activities such as convenient access to transit, jobs and other facilities and services located within neighborhoods across the City?

DESCRIPTION

Using the City's Transportation data, students should analyze the **transportation connectivity** among the City's communities and assess how existing transportation modes (i.e. roads, sidewalks, trails, cycling lanes) link these areas and determine if gaps in connectivity can be identified and addressed between key destinations.

Possible questions to answer include:

- How can the street network data be used to understand where roads are in areas where there may be opportunities to improve connection with other types of active transportation networks such as sidewalks or cycling paths?
- How do the data show where intensification areas are located across the city and provide insight into where there are opportunities to improve transportation connectivity in other areas?
- What is the connectivity for public spaces and services that are important for residents such as healthcare (i.e. health clinics, hospitals), education, community wellness (i.e. recreation facilities, cooling spaces, food security, etc.), and employment (i.e. business districts, industries, etc.)?

Participants can review other sources of demographic and accessibility data such as population density to identify areas with higher pedestrian demand based on residential or commercial density. Demographic information can also be assessed to ensure that active transportation connectivity is prioritized for social equity to allow underserved communities to have similar access to transportation and essential services as other parts of the city. Participants may create walkability scores to review areas to improve sustainable modes of transportation for future growth.

Learn more about Connectivity in Transportation systems:

- https://www.vtpi.org/tdm/tdm116.htm
- https://transportgeography.org/contents/chapter2/transport-and-spatial-organization/relevance-connectivity/
- https://www.ourcommons.ca/content/Committee/441/TRAN/Reports/RP12444313/441_TRAN_Rpt13_PDF/441_TRAN_Rpt13-e.pdf

Datasets for this problem, in addition to any Open Data links to assist with your analysis, will be posted to a password-protected webpage. This webpage will be updated throughout the competition as more data and links are made available. Do NOT assume that the provided data is in a ready-to-use format. Some data may require preparation such as cleaning or transformation before being analyzed.

PHASE ONE DATA FILES AND LINKS

This data is only available to those who have agreed to the Non-Disclosure Agreement.

2025 Data Link: https://datacompetition.mohawkcollege.ca/2025-data-links/

Password:

@2025_HEADforAnalytics#%

Do not share this problem and data outside of your teammates.
Sharing and distributing this problem information is expressly prohibited.
More information may be provided by the Competition Committee at a later date.
If there are any questions you may submit them to datacompetition@mohawkcollege.ca.