

Augmentation of Canadian Population Statistical Data

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Agenda



Organization/Client

- Two main organizations:
 - Transport Canada (TC)
 - National Research Council (NRC)
- The client, Iryna Borshchova, is a Research Officer at the NRC.

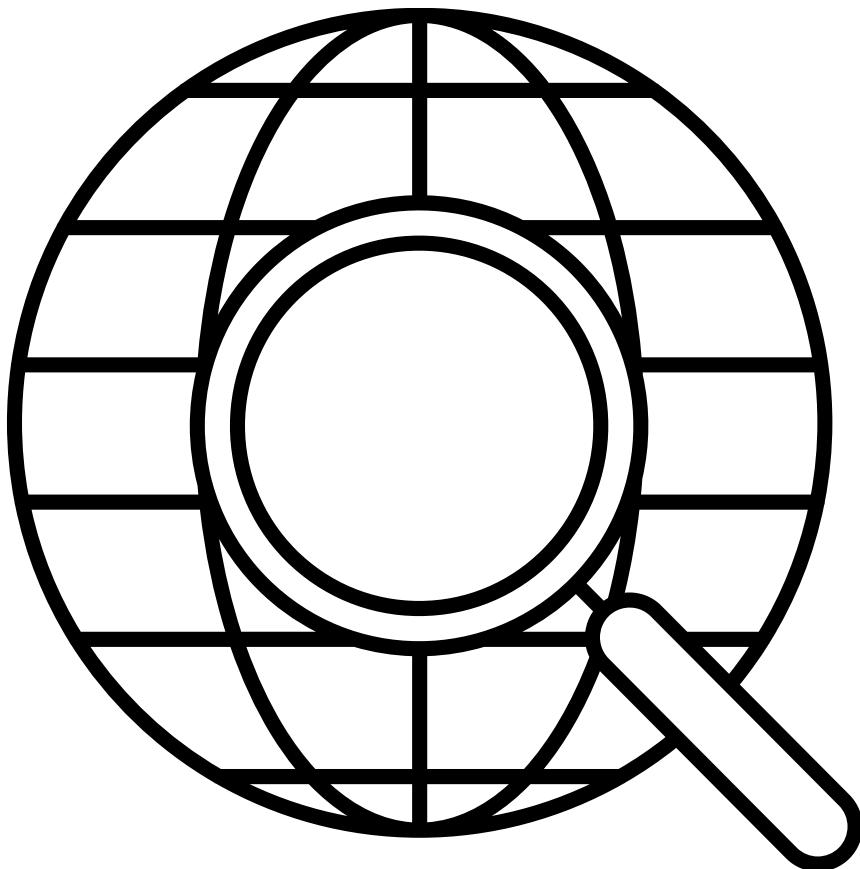
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Purpose

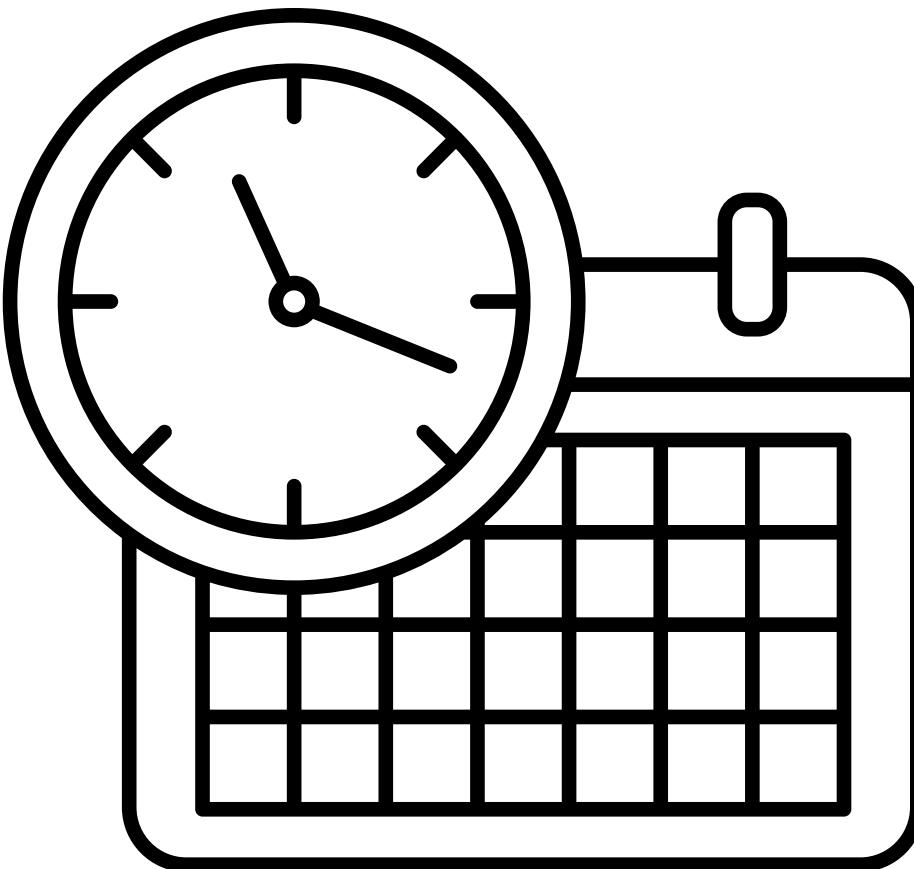
Our tool enables the safe and effective integration of Remotely Piloted Aircraft Systems (RPAS) into the Canadian Airspace using population data.

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Client's Requirements



An efficient method to determine the ground population density of an AOI



Accounts for temporal fluctuations

Scope

- Specific Operations Risk Assessment (SORA) process
 - Ground Risk Class (GRC) assessment
1. The population data estimates from Statistics Canada and TELUS must be able to easily be compared for evaluation.
 2. Tool must be able to sample multiple AOIs and flight paths at one time and find high-density areas at specific times.



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Workflow

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<https://app.diagrams.net/#G1084YOR.ygSKoJLPQwJZ-0Sow0Fm9A996F>

GT

Documentation

Main Dependencies

Python
Geopandas

Fiona

Folium

Shapely

Installation

conda env create -f environment.yml This may take a few minutes Once finished activate the environment
conda activate popFinder_env

If you run into any problems please consult to
<https://conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html>

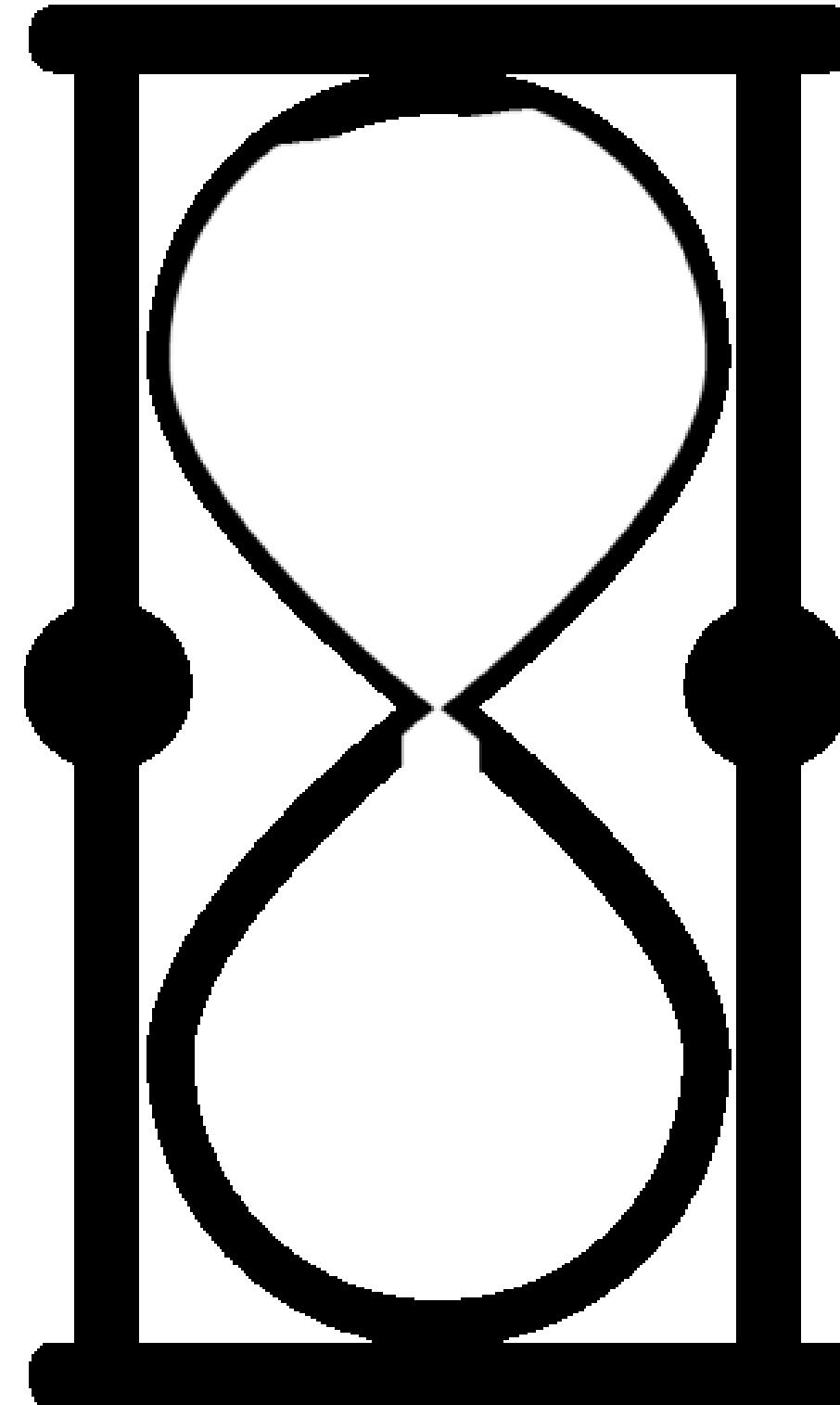
GS

Demo

https://www.youtube.com/watch?v=5-oUmeRp_58&ab_channel=GraceThompson

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Challenges/Limitations



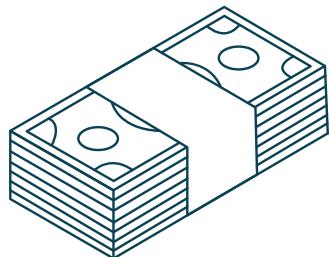
Client interactions

We met together up to four times a week, in total over 30 times in the semester.

We met with Iryna every week until the presentation

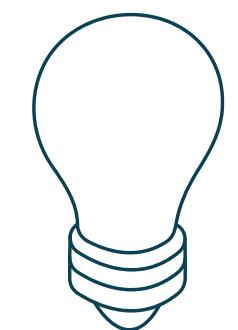
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Conclusions



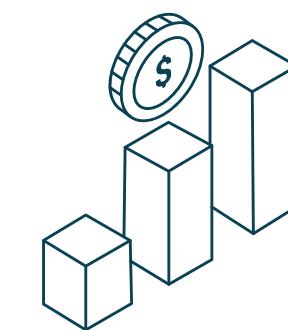
Near Future Work

- Add the recalculate functionality to know when to recalculate automatically
- Input legends for Folium (for lines)



Potential Future work

- Add csv or geopackage from a previous run and restart from there
- Potential use with drone flights for delivering organs



Real life work experience

Acknowledgements

Iryna for being
the best client we
could hope for
and continually
supporting us!

Derek for creating
the mock TELUS
data draft.

All the sites that
had given us
inspiration.
They were noted in
the tool itself.

Thank you!

Do you have any questions?