

Layers

07
November 2020

Dalhousie EES - Summary of Virtual Field Trips 2020 (DRAFT)

Dalhousie University - Earth and Environmental Sciences

Nova Scotia Conrad's Head Joggins Georgeville Beach Cheverie Margaretsville Horton Bluff Rainy Cove Port Greville SM Batholith

Dr. Owen Sherwood provides an overview of the Horton Bluff section:

The Horton Bluff Formation with Dr. Owen Sherwo...

8:55 / 22:01

Detailed 3D model of the fault at the east end of the beach:

Horton Bluff (DRAFT)

Elements of nine virtual field trips were assembled in ArcGIS Online by a team of geologists from Dalhousie's Department of Earth and Environmental Sciences. Mike Young led this innovative project with support from Jennifer Strang in the GIS Centre. This resource encourages students to engage with geospatial data captured using a wide variety of file formats from a single interface. Displayed above is the Horton Bluff Formation. View it [here](#). Story on page 3.

A Dalhousie newsletter about GIS & Data

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IN THIS ISSUE



Virtual Field Trips

How do you run field trips for students who might not be in the same province or country? This was the problem faced by Dal's Department of Earth and Environmental Sciences. The answer for Mike Young was to do [virtual field trips](#) in the undergraduate program, supporting first to fourth year classes.

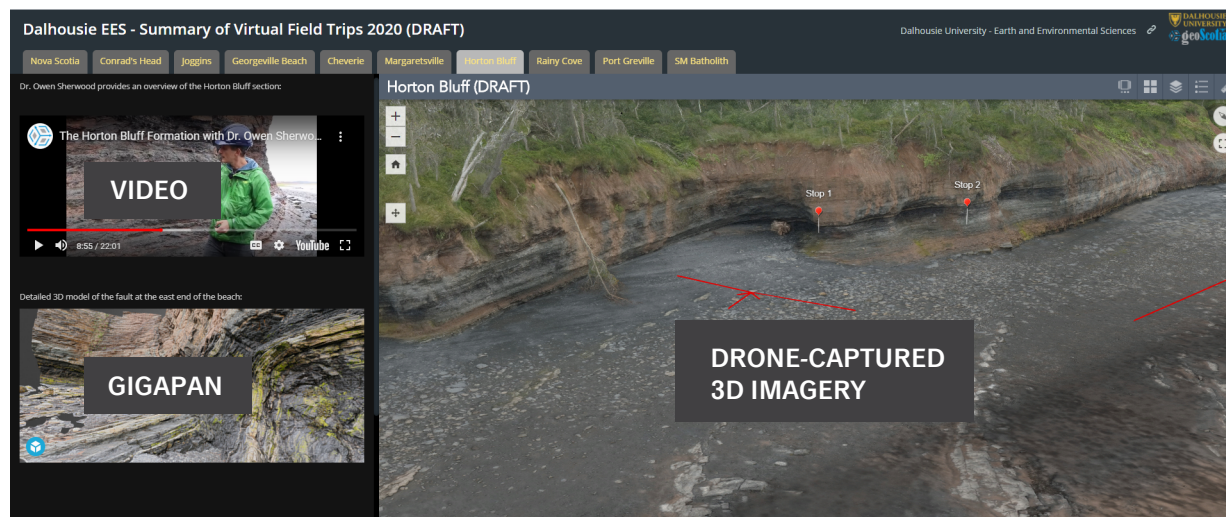
Young had already been developing some online resources to enhance

his in-person field trips, but when the pandemic forced all classes online, his virtual field trips project became a priority.

Young had drone footage, videos, and high-resolution imagery, but he didn't have a platform where students would be able to access the content in a logical, easy-to-understand way. After looking into a few online methods, Mike decided that

ArcGIS Online was the platform that was going to serve him best. With the help of Jen Strang from the GIS Centre and Honours student Rosa Toutah, they created an interactive experience for students.

ArcGIS Online had a number of advantages for this application, including that it is browser-based, it can import many types of geospatial layers, it has the ability to query



Screenshot from a virtual field trip. On the left, top, is a video of the professor onsite talking about the geology of the area. Below the video on the left are high-resolution Gigapan images that students can interact with. On the right is a 3D scene showing the area in situ within the province. Users can move around, zoom in, and click on stops and lines to get more information. The 3D imagery was captured with a drone flying vertically against the cliff and horizontally over the beach, in an overlapping grid pattern. Specialized software is used to reconstruct the three-dimensional features.

Virtual Field Trips (continued)



This Gigapan image allows users to zoom into the image to see the Horton Bluff fault-bend fold details. Gigapans are digital images with billions of pixels. These high-resolution panoramic images enable students to zoom from the 100-meter outcrop scale to the 1-centimeter mineral scale.

and do some analysis, it can accommodate additional browser-based information like YouTube videos and high-resolution Gigapan images, and it has a tabbed field trip interface that was easy to use. There were a couple of drawbacks, including a limited ability to do 3D analysis online and the inability to embed the use of a detailed compass.

The virtual field trips were developed over the summer to support nine courses in Earth and Environmental Sciences in the fall term.

Field trip sites included Conrad's Head, Joggins, Georgeville Beach, Cheverie, Margaretsville, Horton Bluff, Rainy Cove, Port Greville, and the South Mountain Batholith.

In the virtual field trips run so far, students seem to be highly engaged. It is expected that these virtual field trips will continue to be used even when in-person classes resume for both preparation and review of in-person field trips.

Layers

07

November 2020

COVID-19 Datasets from StatCan

The folks at Statistics Canada have been working faster than ever to provide researchers and decision-makers with current data related to the coronavirus pandemic. More than twelve datasets have been released so far; some of these datasets (CPSS) are collected directly from survey respondents, but others (ICC, ICPPS) have been obtained by crowdsourcing.

ABOUT CROWDSOURCING

Statistics Canada has adopted a way to collect information anonymously that can be done faster than designing and conducting probability-based sampling surveys. Canadians with knowledge of a topic are asked to provide specific information for a defined period of time. Once the data has been collected it is available for statistical purposes.

ACCESS

The best way to access some datasets and related documentation is to choose the DLI database [[UT SDA @ CHASS](#)], use your Dalhousie NetID authentication, and search for [COVID-19 Related Surveys].

COVID-19 RELATED SURVEYS FROM STATISTICS CANADA (release dates)

Impacts of the COVID-19 Pandemic on Postsecondary Students 2020 (ICPPS) (May 12, 2020)

Crowdsourcing: Impacts of the COVID-19 on Canadians (ICC)

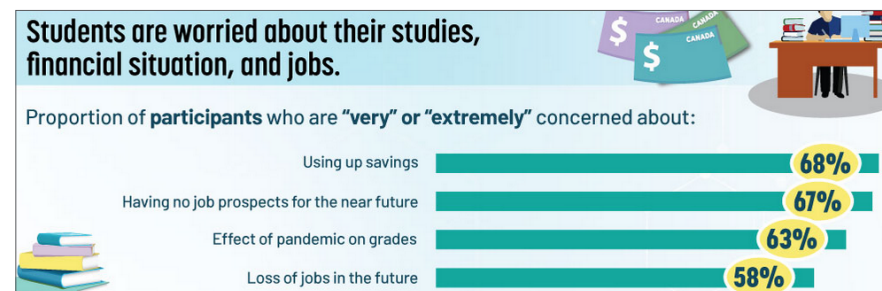
- Impacts of the COVID-19 on Canadians (June 3, 2020)
- Your Mental Health (June 11, 2020)
- Perceptions of Safety (June 25, 2020)

- Trust in Others (July 9, 2020)
- Parenting During the Pandemic (August 13, 2020)
- Living with Long-term Conditions and Disabilities (September 3, 2020)
- Experiences of Discrimination (October 8, 2020)

Canadian Perspectives Survey Series (CPSS)

- Series 1: Impacts of COVID-19 (May 6, 2020)
- Series 2: Monitoring the Effects of COVID-19 (June 18, 2020)
- Series 3: Resuming Economic and Social Activities During COVID-19 (July 30, 2020)
- Series 4: Information Sources Consulted During the Pandemic (October 29, 2020)

Even more datasets are available, e.g. [Data tables on confirmed cases of COVID-19 from the Public Health Agency of Canada](#). For assistance, contact [Julie Marcoux](#) or [Sai Chua](#).



One example of crowdsourcing took place from April 19 to May 1, 2020, as the winter term was ending at most universities and colleges. More than 100,000 post-secondary students responded to a questionnaire (ICPPS). Source: <https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020032-eng.htm>

Layers

07
November 2020

Visualizing COVID-19 Data for Nova Scotia

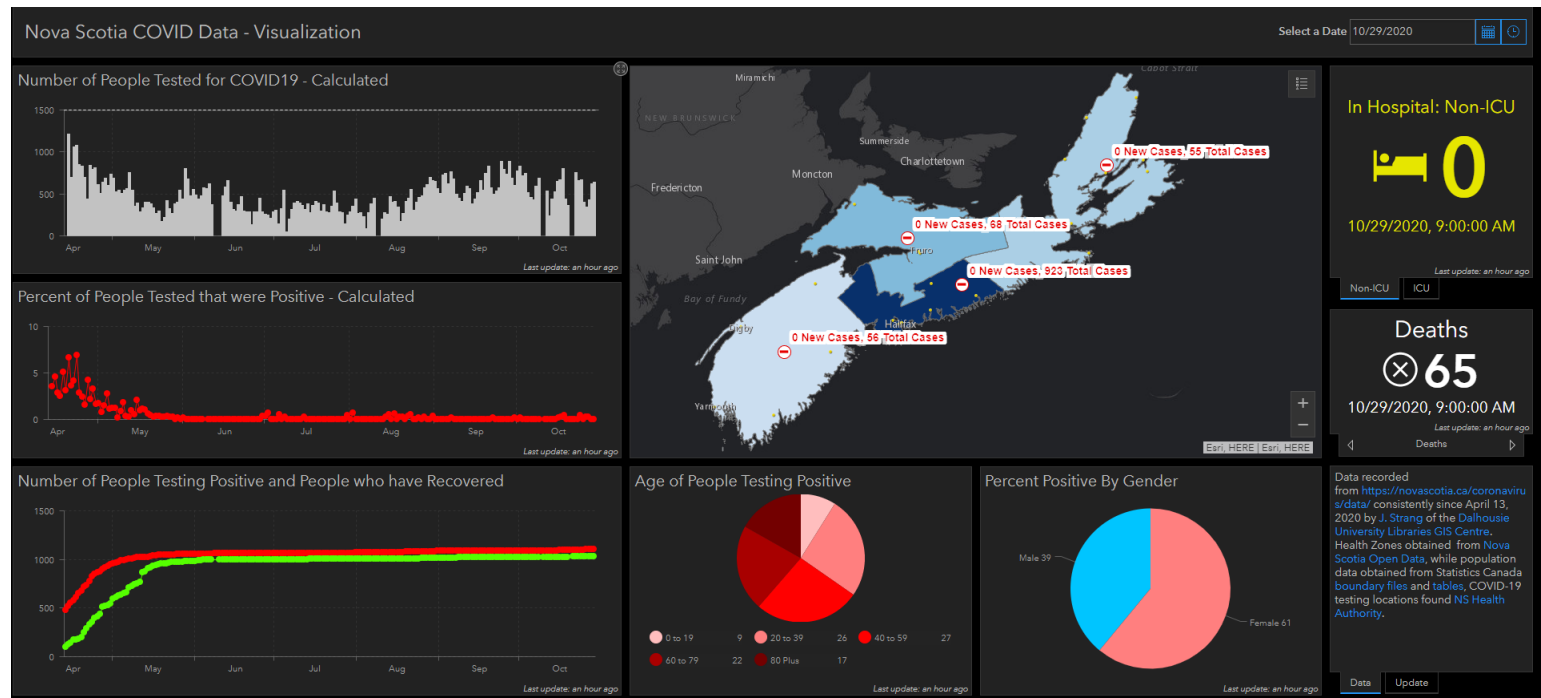
The Nova Scotia government has been releasing daily information since the beginning of the pandemic. These frequent updates keep people informed and provide a snapshot of what is happening within our province; however, the data released by the province does not show how things change through time.

Jennifer Strang of the GIS Centre created this [Nova Scotia COVID Visu-](#)

[alization Dashboard](#) in ArcGIS Online. It combines data from the Nova Scotia Health Authority, Nova Scotia Open Data, and Statistics Canada. It is updated daily to be relevant and useful, and available online. These features allow anyone to view our provincial data in a new and different way, including the capability to see how all of the numbers change over time.

If students, staff, or faculty are interested in the process of making dashboards, please contact us in the GIS Centre. We are always looking for ways to promote new and exciting GIS initiatives!

Contact us in the GIS Centre:
Jennifer.Strang@dal.ca
James.Boxall@dal.ca



DELVING INTO DATA DEFINITIONS

Looking critically at data in a table or dataset is an essential data literacy skill. Definitions tell you how and when a specific piece of data was collected and calculated. You may already be aware of the context and units of the observations, but check anyway. Ask yourself, have you read the data definitions recently, or are you assuming that you know what the numbers mean?

Even an experienced researcher who looks at metadata (data about data) might enjoy the following cautionary examples highlighting the importance of reading data definitions and thinking critically about data.

COMMUTING DURATION IN HALIFAX (as a census subdivision)

This data table from the 2016 census profiles tells us that 79,430 workers in Halifax aged 15 years and over normally have a work commute of “15 to 29 minutes.” It seems fairly straightforward, but how would you look at this data?

A critical thinker would wonder about these characteristics: Does the data describe a one-way commute

or a return trip? When were these commutes happening? Does seasonality or time of day come into play? Are these “average” commutes over a year, and if so, were the workers estimating an average themselves? Are these commuting durations from a specific reference period?

If you don’t know the answers and want to learn more, have a look at the commuting duration definition in the [Census Dictionary](#) and the [Journey to Work Reference Guide](#).

DIABETES BY SEX AND BY AGE GROUP

You might be interested in whether

Commuting Duration	
Total commuting duration for the employed labour force aged 15 years and over in private households with a usual place of work or no fixed workplace address — 25% sample data 176	194,735
Less than 15 minutes	48,560
15–29 minutes	79,430
30–44 minutes	42,820
45–59 minutes	13,960
60 minutes and over	9,960

Source: Census Profile. 2016 Census. [Statistics Canada Catalogue no. 98-316-X2016001](#).

males or females are more likely to suffer from diabetes — or is this condition roughly equal between the two sexes? Can we generate a table and just compare the percentage of males to the percentage of females and call it a day?

Most StatCan data tables contain footnotes. The footnote for diabetes states: *“Population aged 12 and over who reported that they have been diagnosed by a health professional as having Type 1 or Type 2 diabetes, including females 15 and over who reported that they have been diagnosed with gestational diabetes.”*

This means that the diabetes numbers for females includes a type of diabetes not present in males. When trying to compare cases of diabetes between females and males, that’s important to know! And, if the numbers represent people that have been “diagnosed by a health professional,” we’re likely missing undiagnosed cases. This occurs most frequently with teenagers.

CENSUS 2021

Statistics Canada has released [The](#)

Canada (excluding territories) ¹		
Both sexes		
Diabetes ⁵		
Number of persons		
Age group	2018	2019
Total, 12 years and over	2,237,800	2,495,100
12 to 17 years	12,000 ^E	15,400 ^E
18 to 34 years	75,300	93,200
35 to 49 years	276,000	323,200
50 to 64 years	779,900	845,400
65 years and over	1,094,600	1,217,900
E= use with caution		

Source: Statistics Canada. [Table 13-10-0096-07 Diabetes, by age group](#).
<https://doi.org/10.25318/1310009601-eng>

[Road to the 2021 Census](#) which includes the questionnaires that will be used for the next census, five fact sheets, a note about COVID, and three in-depth technical reports.

New and updated content for 2021

includes gender, which can differ from sex at birth and change over time; more than one mode of commuting transportation (e.g. walk and bus, or car and bike); current or previous military service; and two new questions for Inuit and Métis populations.

Advice for the GIS Community

GIS contacts: Jennifer.Strang@dal.ca
James.Boxall@dal.ca

GETTING GIS CENTRE HELP DURING COVID-19

With almost all of Dalhousie's classes online and most staff working from home, how do you get help with your GIS projects?

The GIS Centre is busy answering questions through [email](#). You can also [book appointments](#) with any of the GIS Centre staff. The service hours are Monday through Friday, 9 a.m.–4 p.m. (Atlantic Standard Time).

We are piloting some evening hours for the fall term, Mondays and Thursdays, 7–10 p.m. (AST). You can [book an appointment with the GIS Assistant](#), email GIS@dal.ca, or call the GIS Centre through Microsoft Teams by searching for gis@dal.ca. We hope these extra hours of support will be particularly helpful for those living in different time zones.

OPTIONS FOR USING ArcGIS SUITE OF TOOLS

With limited physical access to the Dalhousie campuses, we have been working hard to ensure you have access to the software you require. The [three options](#) you can use are downloading the software to your personal machine, using RLab (remote access), or using VLab (virtualization).

The best option for students with Windows-based machines is to [download the software](#). ArcMap (v10.5) and ArcGIS Pro (v2.5) are available and the instructions for software installation are on the specific download page. **When using this software at home, you must be connected to the VPN prior to using the software.** If you need help getting on the VPN, contact the [IT Help Desk](#).

The next two options (RLab and VLab) are available to students enrolled in specific courses.

The second option is [RLab or Remote Lab](#). RLab provides remote access to a computer in a lab on a Dalhousie campus. **Prior to accessing RLab, you must be connected to the VPN.** When you go to the site, select the lab and computer you are logging into. A pop-up notice will appear, downloading a file. Once the file is downloaded, open it and follow the log in instructions. You will see the desktop as if you were sitting at the machine in the lab. RLab works on both Windows and Mac machines.

The third option is [VLab or Virtual Lab](#). As the name suggests, it isn't a physical lab. There are two options for accessing VLab — either through a browser or through free downloadable software

called the Horizon Client (preferred method). You will need to authenticate using your NetID and password. A Windows desktop will appear where you can do your work. VLab is recommended as a second choice for Macs.

DATASETS TO EXPLORE

We feature datasets in every issue of *Layers*. If you know of any interesting datasets, [tell us](#) and we'll share them.

- [Bathymetry Data](#)
Access to Bathymetric data both Single and Multibeam from various locations worldwide. Allows you to easily find data, get metadata about the survey picked, and download the information.
- [Elevation Data](#)
An easy interface to access tiles of SRTM 30m elevation, gridded data. The coverage is worldwide, excluding polar regions. Access requires a [free NASA Earthdata log in](#).
- [Population Data](#)
Socioeconomic Data and Applications Center (SEDAC) gives you the ability to select from numerous population datasets in gridded format. You can also select resolution and format. Access requires a [free NASA Earthdata log in](#).

Events

INTERNATIONAL GIS DAY

For more than 20 years, GIS Day has provided a time for the global GIS community to celebrate the variety of geospatial work happening at universities and schools, government agencies, private companies, and nonprofit organizations. Here's a virtual message from founder and president of ESRI, [Jack Dangermond](#).

Wednesday, November 18

GIS DAY 2020: COMING TOGETHER WHILE BEING APART

Esri Canada will host a series of virtual lightning presentations from members of the Canadian GIS community from coast to coast. Join us for the whole event or tune in when you can.

Wednesday, November 18, 12:30–5 p.m. (AST)

12:30–1:15 pm *Welcome & Awards – Alex Miller, President, ESRI Canada*

1:30–1:40 pm *Improving operational road maintenance using ArcGIS Online*

1:40–1:50 pm *Caring for our staff using ArcGIS Tracker and GeoEvent*

1:50–2 pm *ArcGIS Apps for the city of Waterloo smoke alarm inspection program*

2:30–2:40 pm *From rocket science to*

pocket science

2:40–2:50 pm *You can treaty walk (& roll) too!*

2:50–3 pm *Field work in the elementary playground*

3–3:10 pm *Teaching GIS-related technology at COGS during COVID-19 times*

3:35–3:45 pm *Project Pandemic*

3:45–3:55 pm *Garbage and recycling cart pickup in the R.M. of East St. Paul*

3:55–4:05 pm *The Okanagan Flood Story*

4:35–4:45 pm *The Canadian GIS Community response to COVID-19*

4:45–4:55 pm *British Columbia COVID-19 Dashboard – A novel approach to data management*

COVID-19 AND REAL-TIME DATA VISUALIZATION IN NOVA SCOTIA

This session is part of the *Information in Action* series, brought to you by Dalhousie Libraries, Maritime SPOR SUPPORT Unit (MSSU) and Nova Scotia Health Library Services.

Part 1: Statistics Canada is producing innovative, responsive data products to help us better understand the pandemic and its impact. Starting with a look at Statistics Canada's *COVID-19: A Data Perspective*, Julie Marcoux and Louise Gillis will discuss the role of crowdsourcing and administrative data in data collection, and consider, among other things, the effect of COVID on our mental health, our working lives, and

our mortality.

Part 2: The Nova Scotia government has been releasing daily COVID data but doesn't provide an interactive way to look at past data. Jennifer Strang has generated a data dashboard which displays Nova Scotia's COVID data using six different visualizations (counts by health region, gender, age, and three variations of positive test results) plus two data counts (hospitalizations and deaths). Jen will describe how she combined data obtained from Nova Scotia Health, Nova Scotia Open Data, and Statistics Canada. The dashboard is updated daily.

Tuesday, November 24, 12–1 p.m. (AST)

UPCOMING DATA LITERACY SERIES

The Dal Libraries will be offering a series of talks about data literacy during the winter term. All sessions will be held online. To view session descriptions and register to attend, visit the [Dal Libraries events calendar](#) in January 2021.

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Find past issues of *Layers*



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