

GEOG 328 Lab 2: Projections and Data Collection

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GEOG 328 B03

February 18th, 2019

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1.1 Primary Data

Primary data refers to data that is collected directly by a researcher from first hand sources. These sources include in-situ data collection, interviews, surveys and experiments. Primary data is raw data that is unmodified and is presented in the form that it was collected. The main advantage of primary data is that the researcher has the ultimate responsibility of ensuring data quality reducing uncertainty in the data-set. Additionally, primary data is necessary in many studies when the data-sets to be studied do not exist. The drawbacks are that primary data collection is costly, time consuming and often unfeasible in studies of large scope or studies that rely on data in remote or distant locations.

1.2 Secondary Data

Secondary data refers to data that is collected by other researchers and distributed. The methods of collection are the same as primary data, however the researcher of the study was not present for the collection of the data. The main advantages of secondary data is the accessibility of data throughout the internet and the wealth of open source data that can be applied to numerous studies. This method is also much cheaper (often free) and much less time consuming as the data is often only a few clicks away. The disadvantage of secondary data is that there is much more uncertainty in the data-set as the researcher has to rely on the collection methods of others, which may be a lower standard than expected. Studies often begin with secondary data to form questions and hypotheses and once the scope of the study is defined, primary data is collected to use in analysis.

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The roads data-set used in the bike map (Figure 1) was obtained from the City of Victoria Open Data Portal. The data-set was published January 14th 2019. The data-set contains 2383 entries, with each entry having 30 attributes. The most important attributes include road classification, length and name, all of which are complete. With all the secondary data used in Figure 1 coming from the City of Victoria, it made sense to use this data-set to ensure consistency. When comparing these roads to those of Google Maps and Google

Earth, it is evident that the data-set is quite accurate with only a few side roads and minor streets missing such as some smaller roads in the James Bay area.

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3.1 Beach Access Points - Primary Data

The data collected by my colleague David Keith and I of beach access points had a mean error of +/- 3.25 m. Since beach access locations are fairly large and noticeable, an accuracy of +/- 3.25m is acceptable for this map. The data was collected on February 8th, 2018 between 10:48 am and 12:31 pm. The data-set includes all required attributes such as easting and northing, time and error as well as additional information such as a description of each point and the satellite connectivity to the GPS unit.

3.2 Bike Routes - Secondary Data

The bike routes data-set used in Figure 1 was obtained from the City of Victoria Open Data Portal. The data-set was published on January 7th 2019. The accuracy is not explicitly defined in the data-set however, when comparing the data-set to Google Maps and Google Earth representations of the same location of show the data-set is quite accurate. the accuracy of bike routes is important however since they are a large and expansive an offset of a few meters should not affect the quality of Figure 1. The data-set is complete with important attributes such as length and classification as well as additional attributes such as owner and date of creation.

3.3 Bike Racks - Secondary Data

The bike racks data-set used in Figure 1 was obtained from the City of Victoria Open Data Portal. This data-set was also published on January 7th 2019. Similar to the Bike Routes data-set, the accuracy is not explicitly defined. The accuracy of bike racks is much more important as they are much smaller less noticeable features then bike routes and beach access locations. A few meters of error should not effect the quality of Figure 1 however errors of +/- 10 m of greater will begin to reduce th effectiveness of the map. Since these are small features they are not visible on Google Earth and are not on Google Maps so it

is difficult to determine the overall accuracy, leading to some uncertainty. The data-set is complete with important attributes such as block name and who the racks are maintained by as well as supplementary attributes such as bike rack style.

3.4 Public Washrooms - Secondary Data

Similar to the roads, bike routes and bike racks data-sets, the public washrooms data-set was also obtained from the City of Victoria Open Data Portal. The data-set was also published on January 7th 2019. The accuracy of the data-set once again is not explicitly defined. Unlike bike racks, washrooms are large noticeable features often with ample signage so they are able to withstand a lesser degree of accuracy than bike racks while maintaining effectiveness. Similar to bike racks these features are not able to be seen on Google Earth or Google Maps which introduces more uncertainty into Figure 1. The data-set is complete with attributes such as facility and address as well as ID and type.

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The connectivity of bike routes on the City of Victoria varies by location. Connectivity refers to density of edges and the directness of edges (Victoria Transport Policy Institute, 2017). A well connected network has many vertices of high degree (intersections) and few vertices of degree one (dead ends). Connectivity refers to the connections of streets as well as the connection of neighbourhoods and locations (Victoria Transport Policy Institute, 2017).

Figure 2 shows a simplified graphic of bike routes in the City of Victoria. This figure shows that Downtown and Harris Green neighbourhoods have adequate connectivity and many routes in various directions. Alternatively, neighbourhoods such as Oaklands, Fernwood and Rockland have poor connectivity with very few bike routes. The interior of these neighbourhoods are inaccessible via bike route. Additionally the bike network in the City of Victoria has many dead ends typically involving AAA off street pathways. Noticeable dead ends occur in Beacon Hill Park and North/South Jubilee.

A transportation plan published by the Capital Region District in 2014 emphasised the importance of bike transportation on the environment as well as city congestion, claiming that there are plans to continue to "fill in the bike network" (CRD, 2014). Older cities such

as Victoria are faced with many problems when extending the bike network mainly due to street size. Many of the narrow streets in Victoria such as Shelbourne street would need many modifications and adjustments to accommodate bikes and vehicles. Additionally, the development of suburban areas often introduces many dead ends in the form of cul-de-sacs. These cul-de-sacs disconnect the network and create gridlock (Victoria Transport Policy Institute, 2017).

In conclusion, it is evident that the City of Victoria and the Capital Region District are implementing solutions to increase the connectivity of the bike network however there are many hurdles such as existing infrastructure, neighbourhood concerns and cost that will certainly impede development.

Bike Map of the City of Victoria

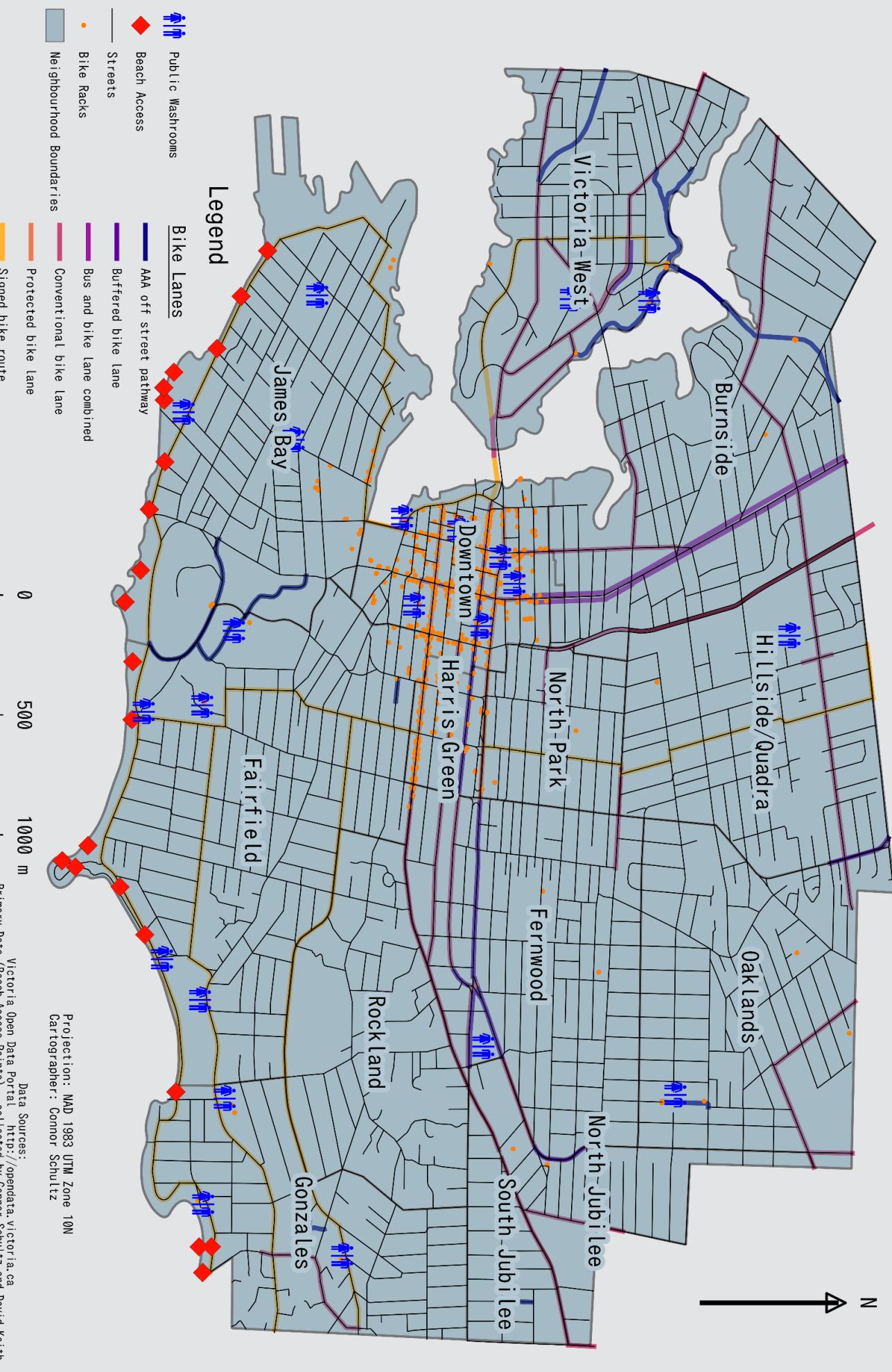
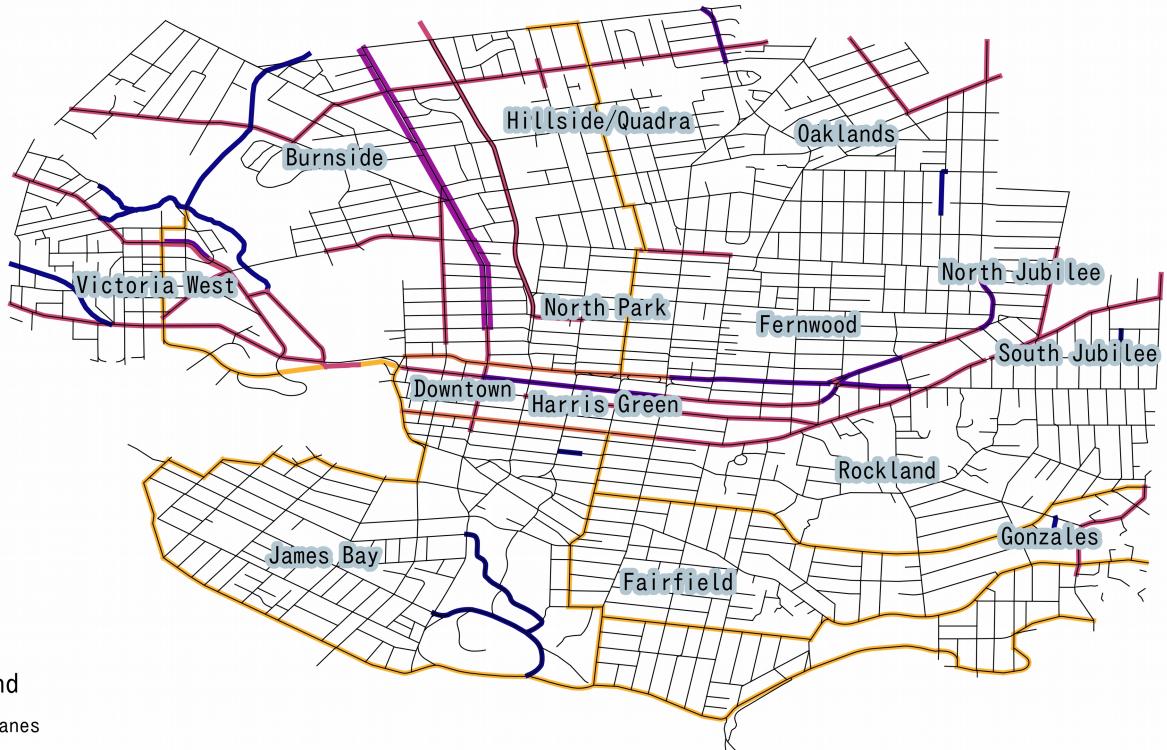


Figure 1: Bike Map of the City of Victoria showing bike routes, beach access locations and public washrooms



Legend

Bike Lanes

- AAA off street pathway
- Buffered bike lane
- Bus and bike lane combined
- Conventional bike lane
- Protected bike lane
- Signed bike route

Figure 2: Simplified Bike route Graphic City of Victoria

	Description	easting (m)	northing (m)	'S_accuracy (i ^	time	talite_connection
1	Gonzalas Bea...	475836	5362095	4.3	10:48	15/24
2	Gonzalas Bea...	475729	5362150	3.2	10:51	16/22
3	Gonzalas Bea...	475729	5362073	3.2	10:55	17/21
4	Ross Bay from...	475083	5361930	3.2	11:13	14/22
5	Ross Bay from...	474427	5361738	3.2	11:19	14/20
6	Ross Bay from...	474227	5361584	3.2	11:26	15/23
7	Spiral Beach fr...	474116	5361222	3.2	11:33	17/21
8	Ross Bay from...	474143	5361305	3.2	11:34	18/21
9	Spiral Beach fr...	474054	5361384	3.2	11:35	17/21
10	Beacon Hill Bl...	473530	5361662	3.2	11:45	11/21
11	Beacon Hill Bl...	473289	5361668	3.2	11:48	14/26
12	Beacon Hill Bl...	472908	5361719	3.2	11:54	16/27
13	Beacon Hill Bl...	473040	5361621	3.2	11:56	14/20
14	Fonyo Beach f...	472655	5361775	3.2	12:06	15/23
15	Fonyo Beach f...	472457	5361873	3.2	12:09	15/21
16	Fonyo Beach f...	472200	5361870	3.2	12:20	15/20
17	Access from H...	472148	5361868	3.2	12:21	17/21
18	Access from H...	472084	5361932	3.2	12:22	15/19
19	Access from D...	471987	5362202	3.2	12:26	16/20
20	Access from D...	471770	5362354	3.2	12:28	17/23
21	Access from D...	471581	5362521	3.2	12:31	14/21

Figure 3: Attribute Table of Primary Data (Beach Access Points)

Layer Properties - Beach Access | Metadata

▼ Description

Short name Beach_Access_Points_Victoria

Title Southern Victoria Beach Access Locations

Abstract 21 Beach Access locations in Southern Victoria. These locations provide direct access to public beaches. All points were collected using GPS Status Pro version for Android with a WGS 1983 Projection. 20 points had an error of +/- 3.2m and 1 point (#1) had an error of +/- 4.3 m leading to an overall mean error of +/- 3.25 m. The data set also includes satellite connectivity.

Keyword list beach access points victoria

DataUrl An URL of the data presentation.

Format

▼ Attribution

Title Data Collected By Connor Schultz and David Keith

Url Scale: 1:5000 - 1:50,000

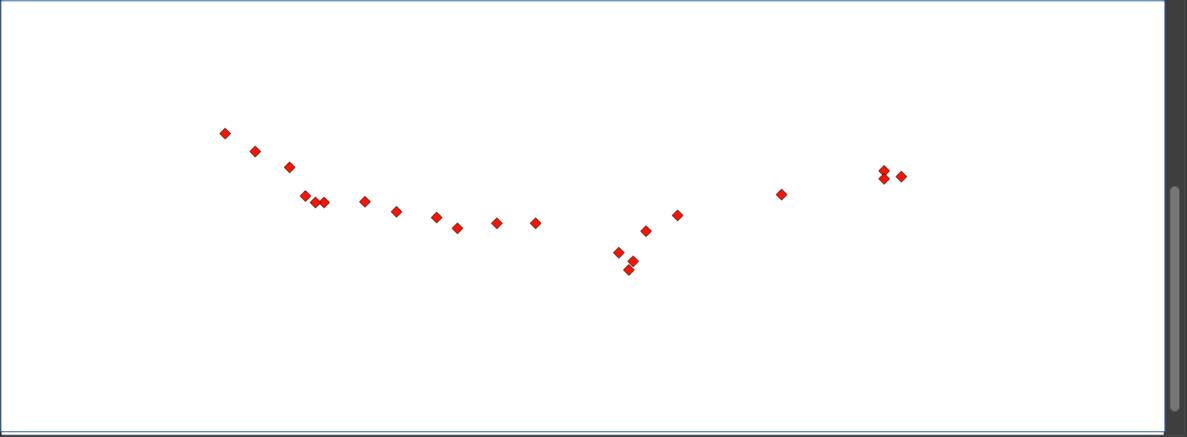
► MetadataUrl

▼ LegendUrl

Url /home/connor/schoolwork_2019/geog328/lab2

Format image/png

▼ Properties



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Figure 4: Meta- Data of Primary Data

5 References

- CRD (2014). Regional Transportation Plan. *Capital Regional District*. Retrieved February 16, 2019, from <https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/rtp-july2014.pdf>.
- Victoria Public Transportation Institute (2017). Roadway Connectivity. *TDM Encyclopedia*. Retrieved February 16, 2019, from <http://www.vtpi.org/tdm/tdm116.htm>