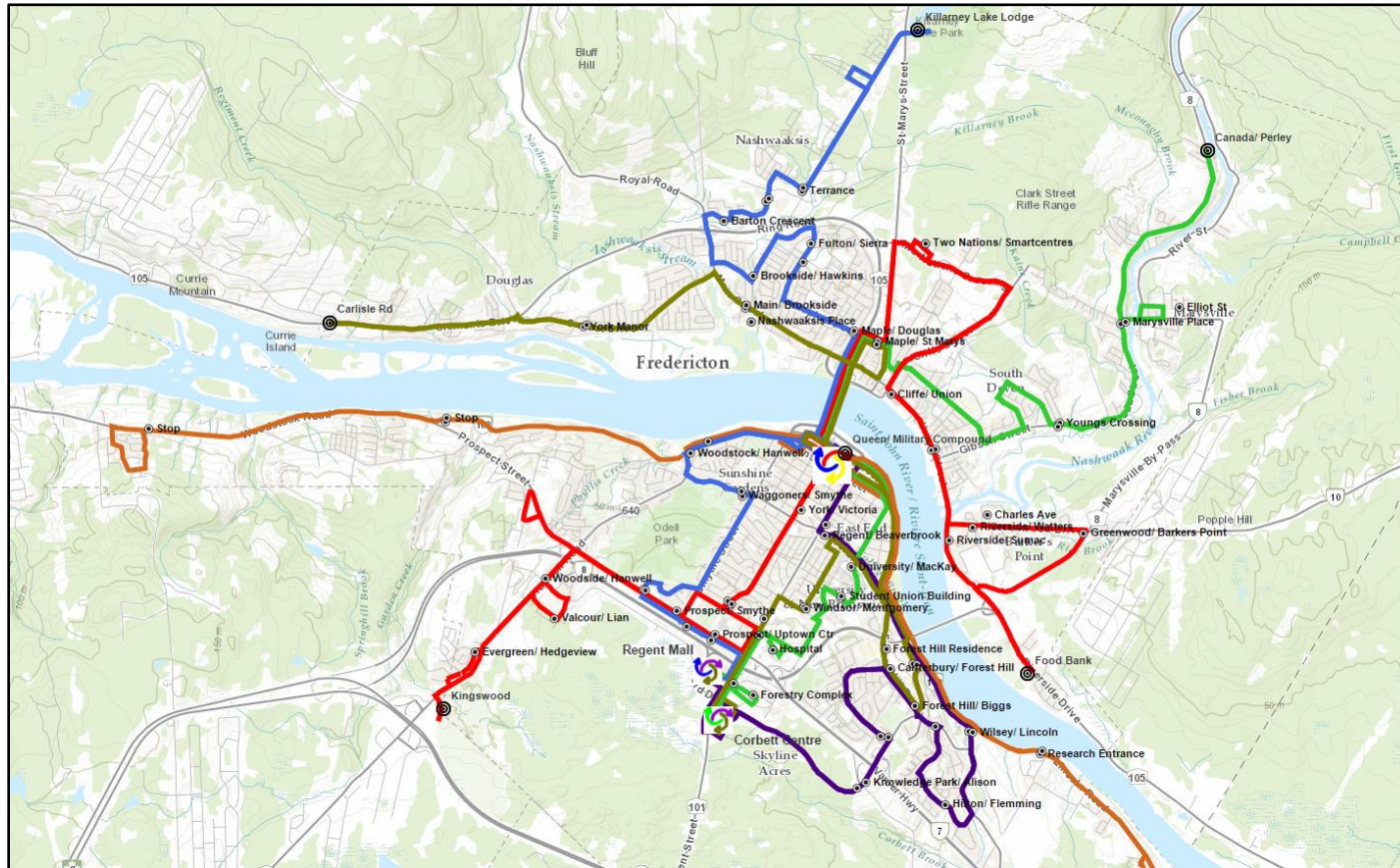


A SPATIAL ANALYSIS OF THE CITY OF FREDERICTON'S BUS STOP LOCATIONS

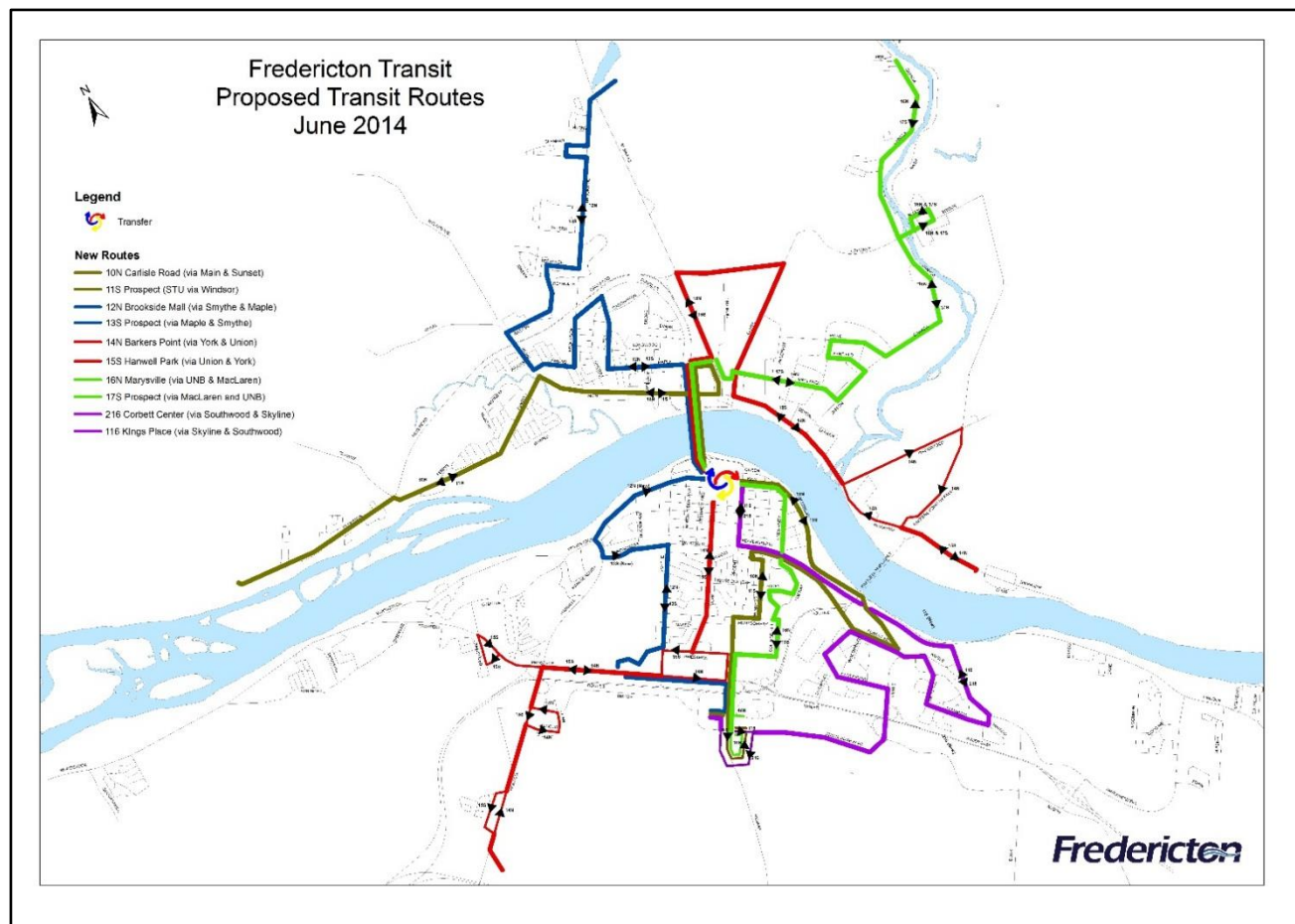
Supervisor Professor Emmanuel Stefanakis

Presented By John Mason

Motivation



Motivation



<http://www.fredericton.ca/en/transportation/TransitChanges2014.asp>

Goals

- ▶ Compare bus routes in terms of how many households they service.
- ▶ Identify routes that are underperform.
- ▶ Assess the existing network in comparison to the proposed changes.

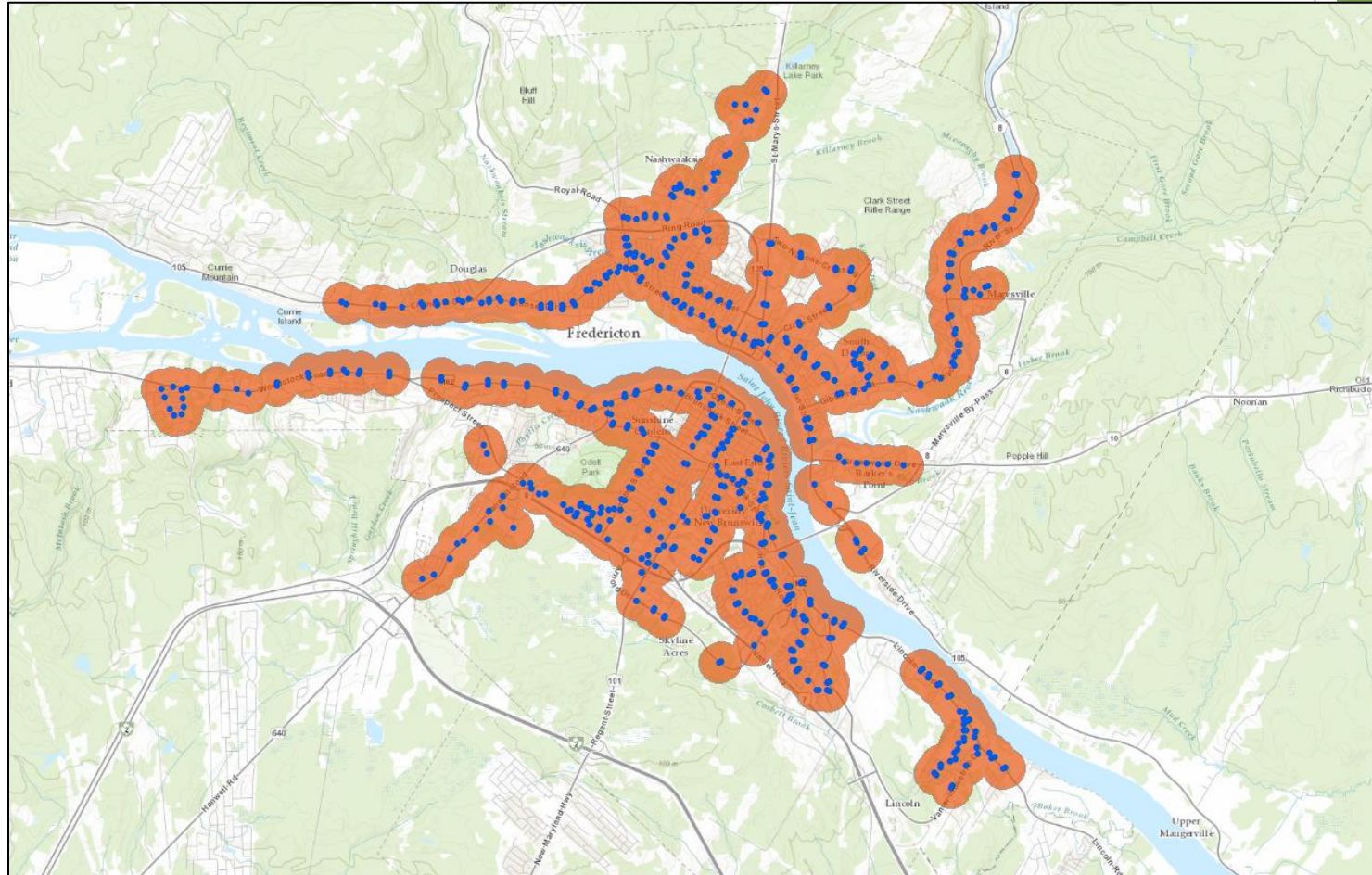
Data Acquisition

- ▶ Georeferenced Civic Address Data
 - ▶ GeoNB Data Catalogue.
- ▶ City of Fredericton Bus Stops
 - ▶ ArcGIS Online.
- ▶ City of Fredericton Zoning Boundaries
 - ▶ ArcGIS Online

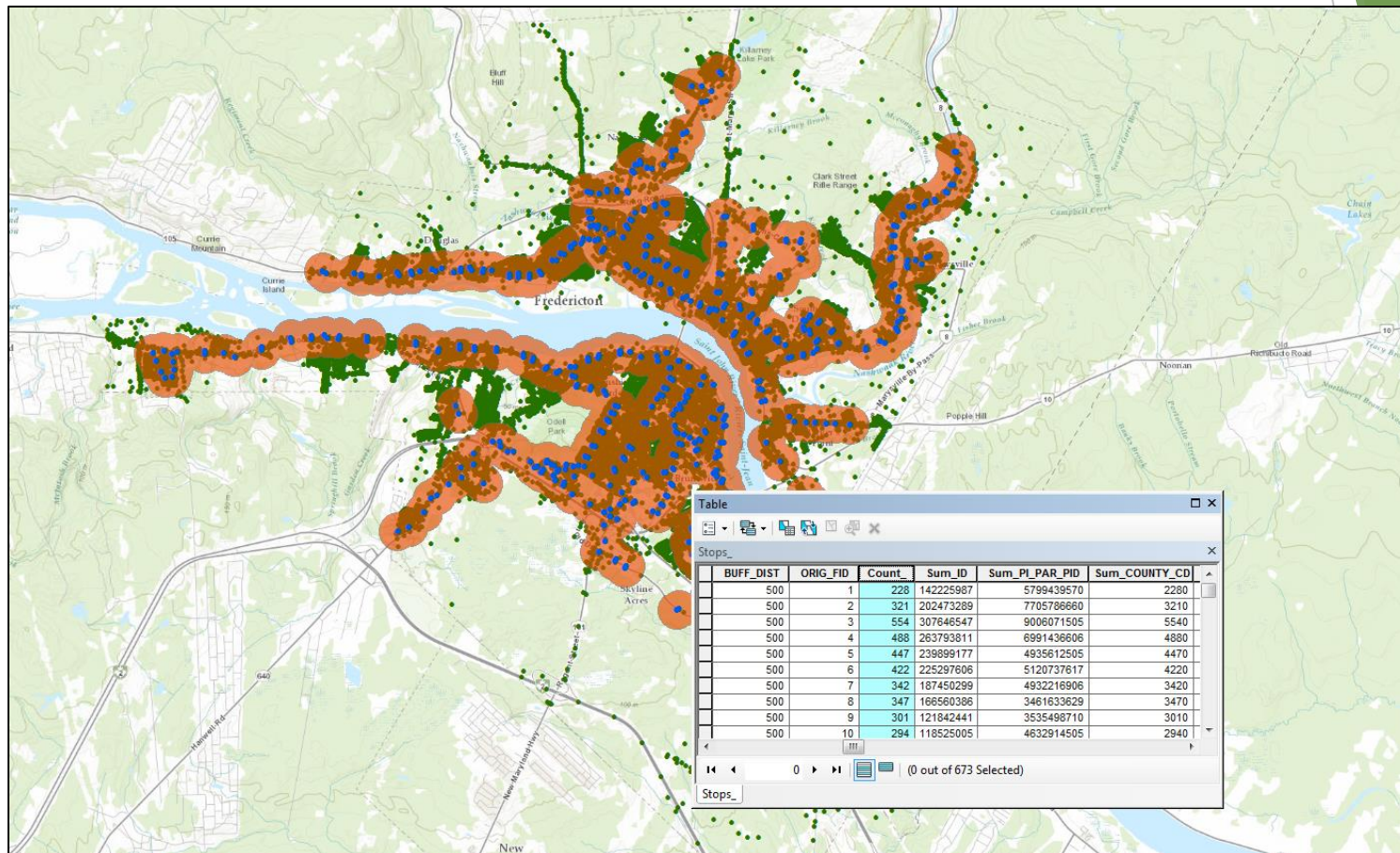
Methodology

- ▶ Create Buffer zones for bus stops.
- ▶ Perform Spatial Join with Civic Address Data and Buffer zones.
- ▶ Compile data for each bus route.
- ▶ Produce Maps from results.
- ▶ Analyze results.

Creating Buffers



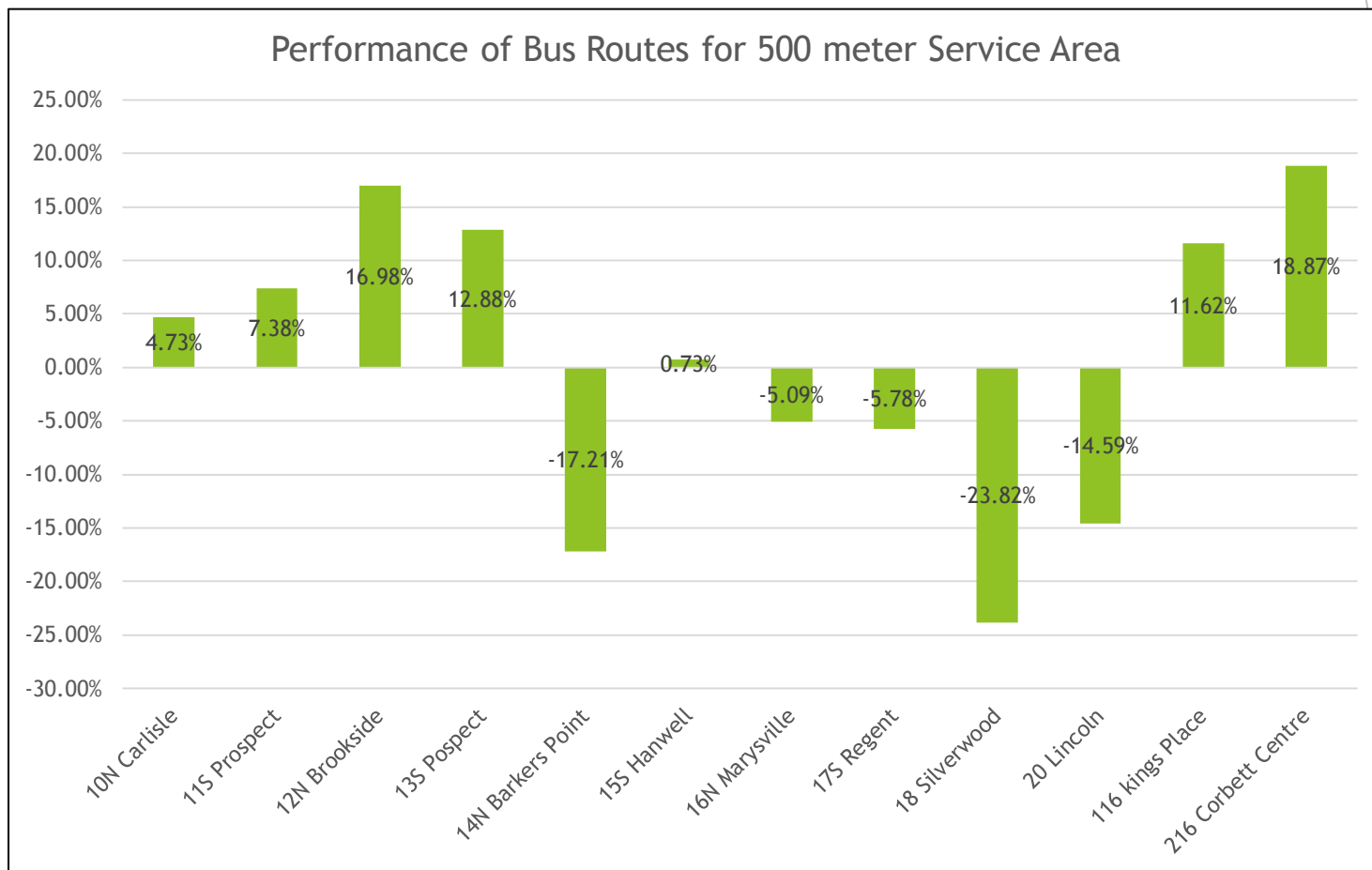
Performing Spatial Join



Compile Spatial Join Data

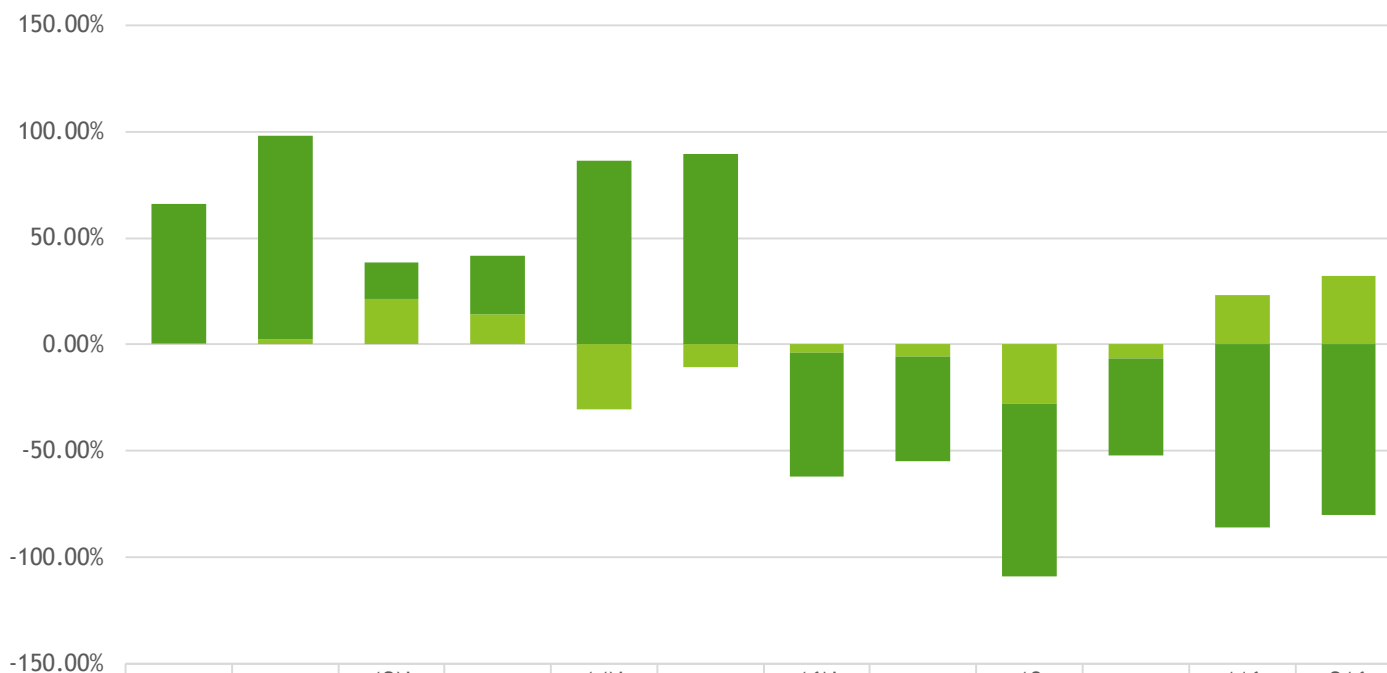
Bus Routes	Count of Bus Stops	Min	Max	Sum	Mean	Difference from Network Mean	Percent Difference from Mean
10N Carlisle	64	23	344	12222	190.97	8.62	4.73%
11S Prospect	59	25	446	11553	195.81	13.46	7.38%
12N Brookside	64	57	446	13652	213.31	30.96	16.98%
13S Pospect	65	56	446	13379	205.83	23.48	12.88%
14N Barkers Point	52	13	543	7850	150.96	31.39	-17.21%
15S Hanwell	45	16	554	8266	183.69	1.34	0.73%
16N Marysville	63	30	411	10904	173.08	9.27	-5.09%
17S Regent	54	31	446	9278	171.81	10.54	-5.78%
18 Silverwood	59	17	446	8196	138.92	43.44	-23.82%
20 Lincoln	65	29	321	10124	155.75	26.60	-14.59%
116 kings Place	45	1	432	9159	203.53	21.18	11.62%
216 Corbett Centre	37	1	444	8020	216.76	34.40	18.87%
Network Total	673	1	554	122723	182.3522		

Comparison of Bus Routes



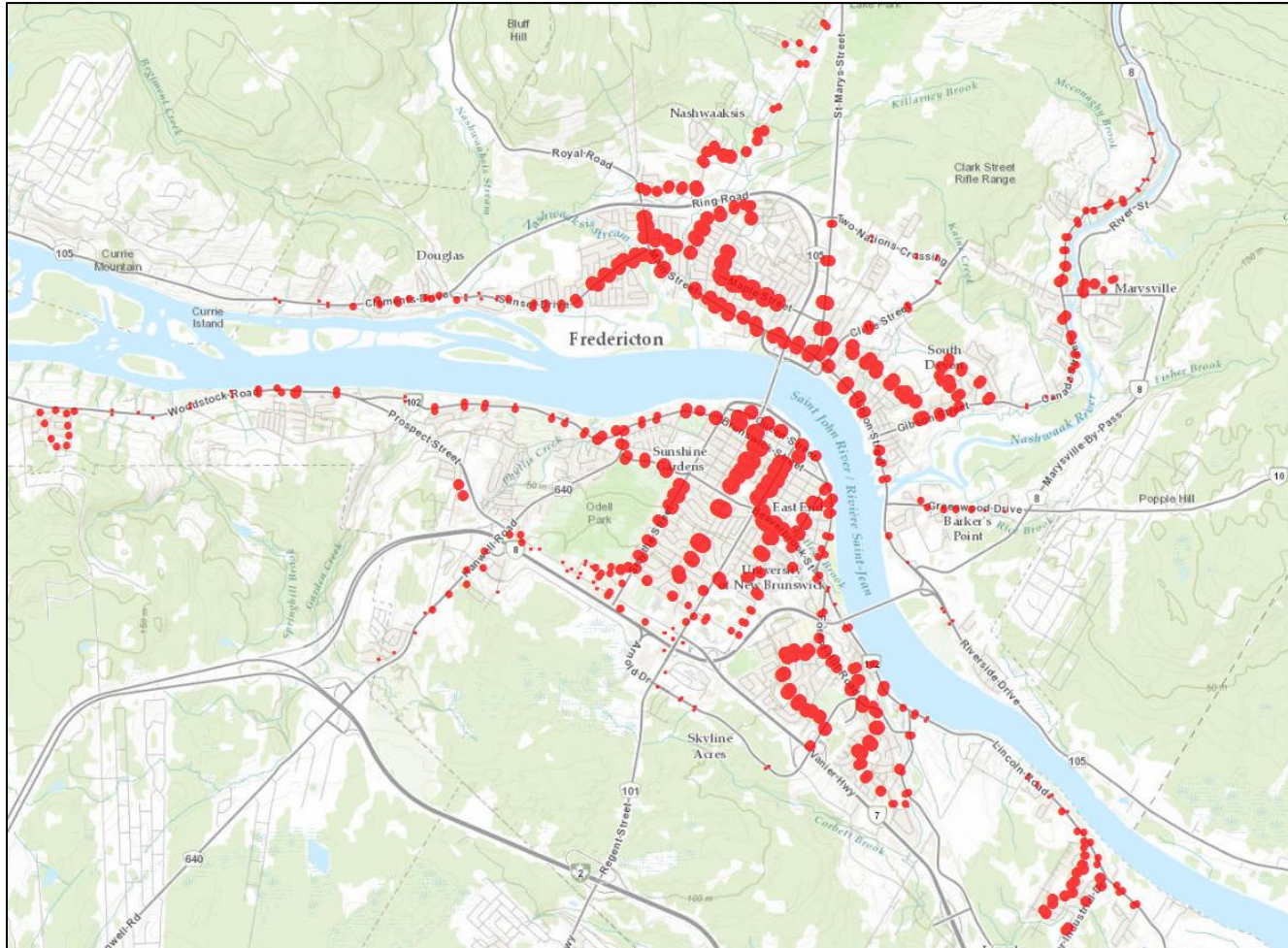
Comparison of Bus Routes

PERFORMANCE OF BUS ROUTES FOR 500 METER SERVICE AREA IN TERMS OF RESIDENTIAL AND COMMERCIAL UNITS

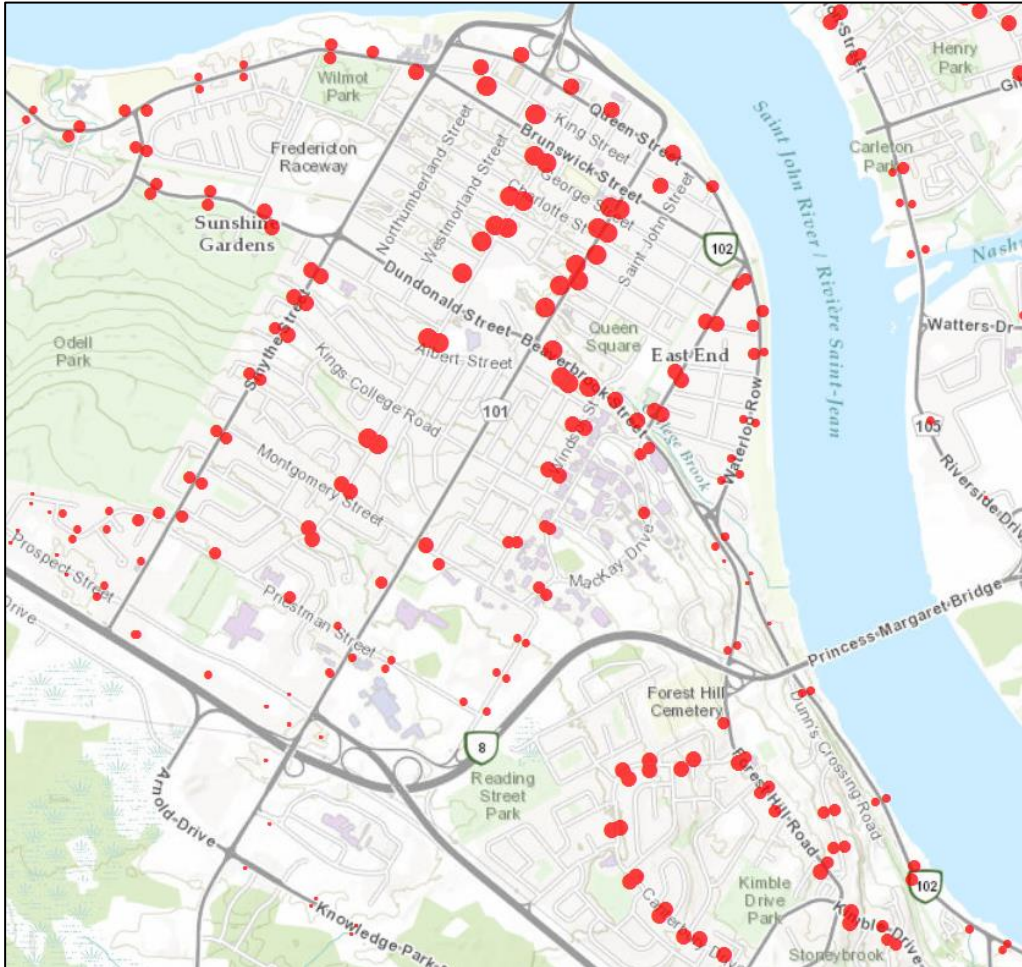


	10N Carlisle	11S Prospect	12N Brookside	13S Pospect	14N Barkers Point	15S Hanwell	16N Marysvill e	17S Regent	18 Silverwo od	20 Lincoln	116 kings Place	216 Corbett Centre
■ Commercial	65.30%	95.74%	17.06%	27.26%	86.22%	89.30%	-58.17%	-48.82%	-81.09%	-45.34%	-85.87%	-80.00%
■ Residential	0.65%	2.35%	21.40%	14.32%	-30.69%	-10.47%	-3.79%	-5.90%	-27.98%	-6.65%	23.15%	32.14%

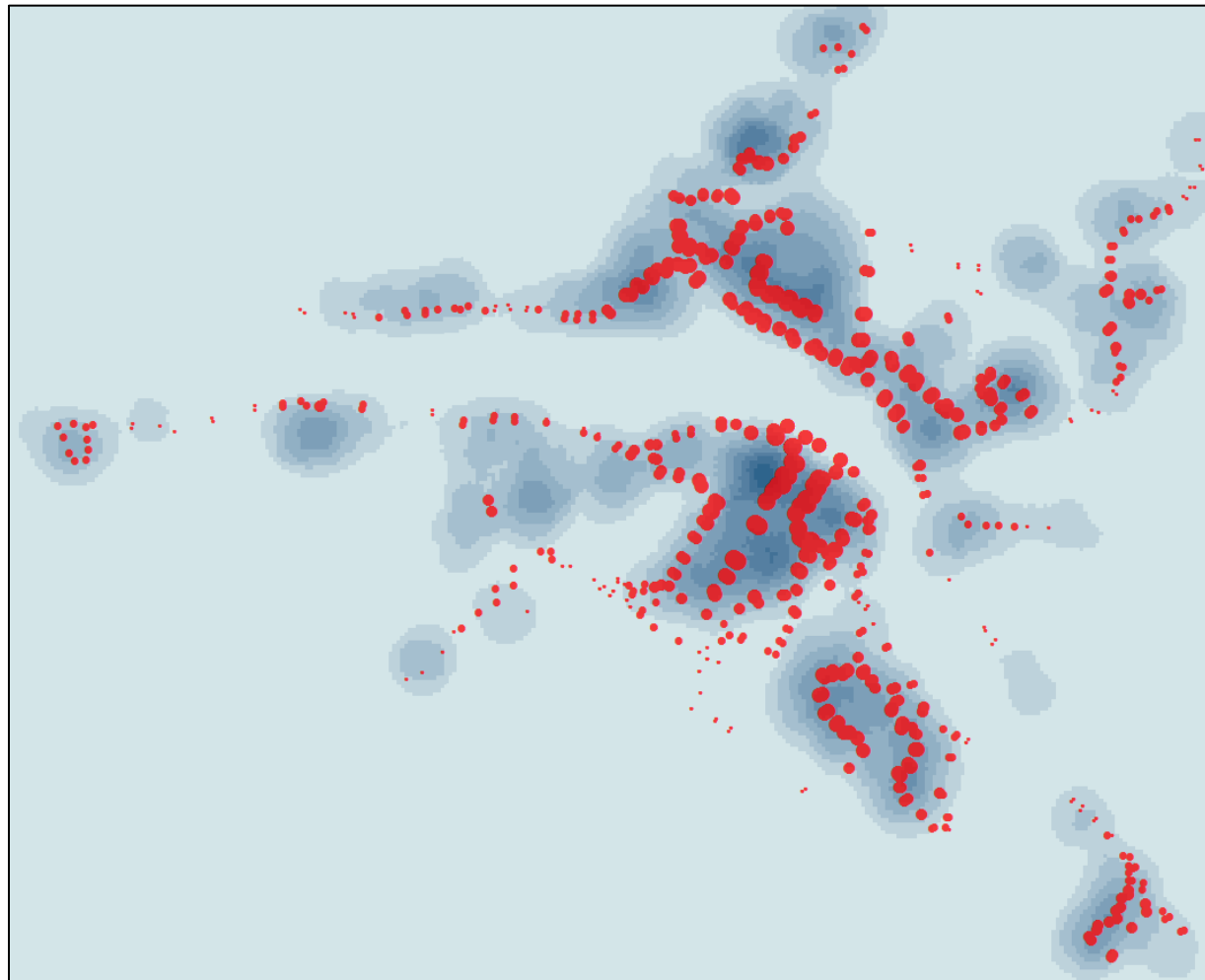
Map Production



Map Production



Map Production



Conclusion

- ▶ The Silverwood, Lincoln and Barkers Point area bus routes were the three worst performing routes.
- ▶ Could potentially eliminate Silverwood and Lincoln routes completely, limit frequency or increase fare.
- ▶ The downtown urban cores on the North and South side, are in need of expanded transit service.
- ▶ The existing bus network only covers approximately 80% of households within a 500 meter service area.

Acknowledgments:

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Monica Wachowicz

