

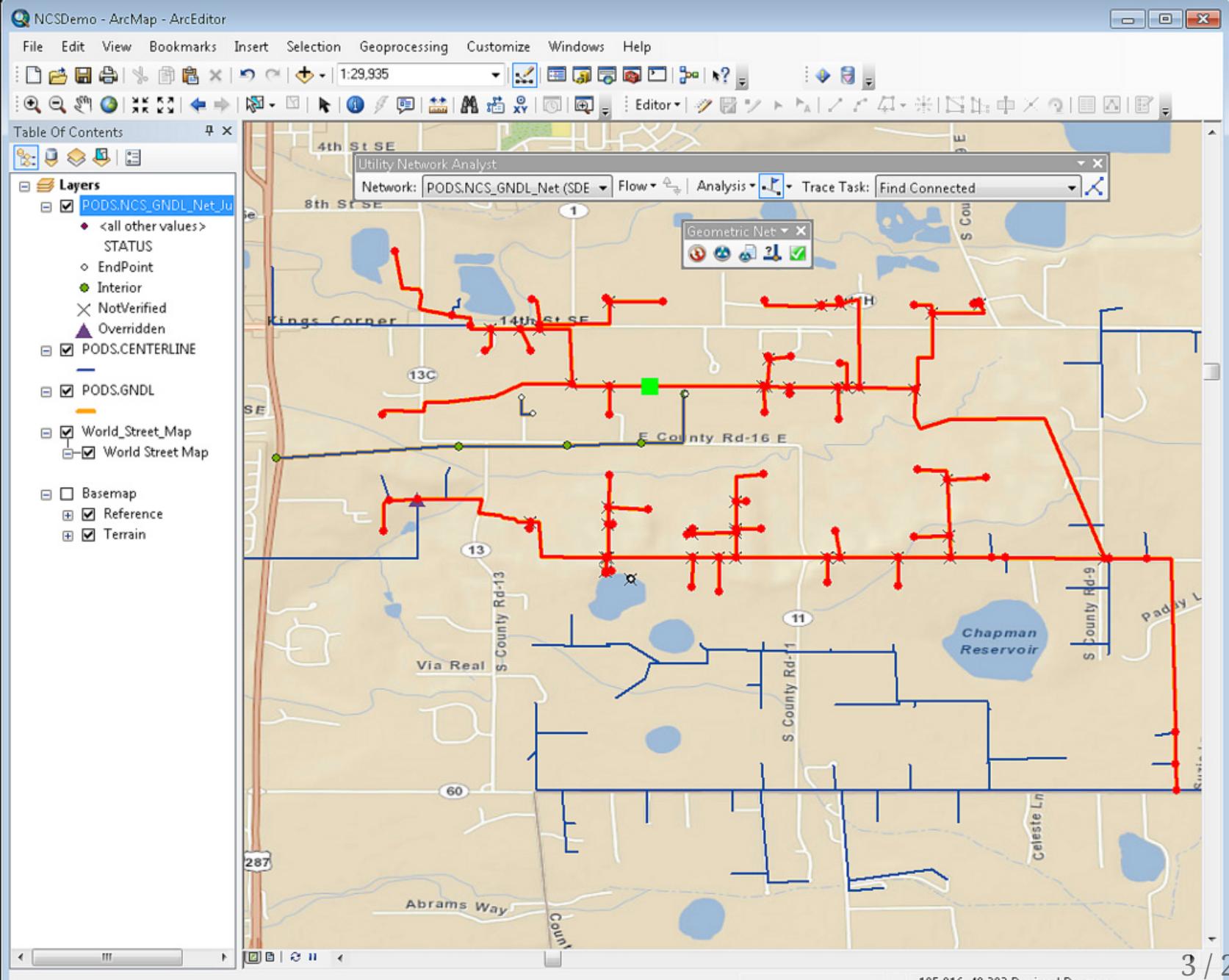
R for Geospatial Data Science

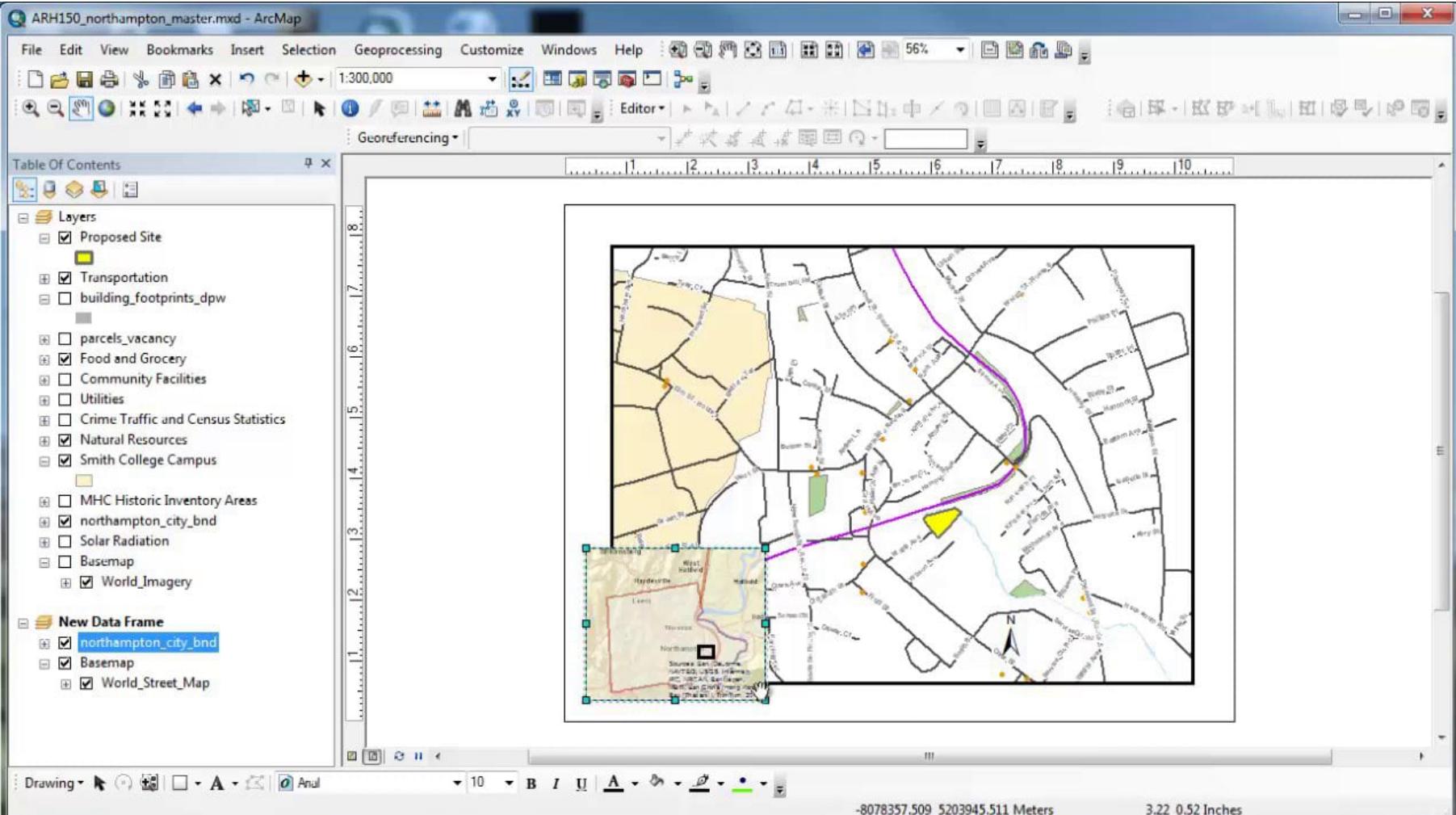
Victoria GeoGeeks Meetup

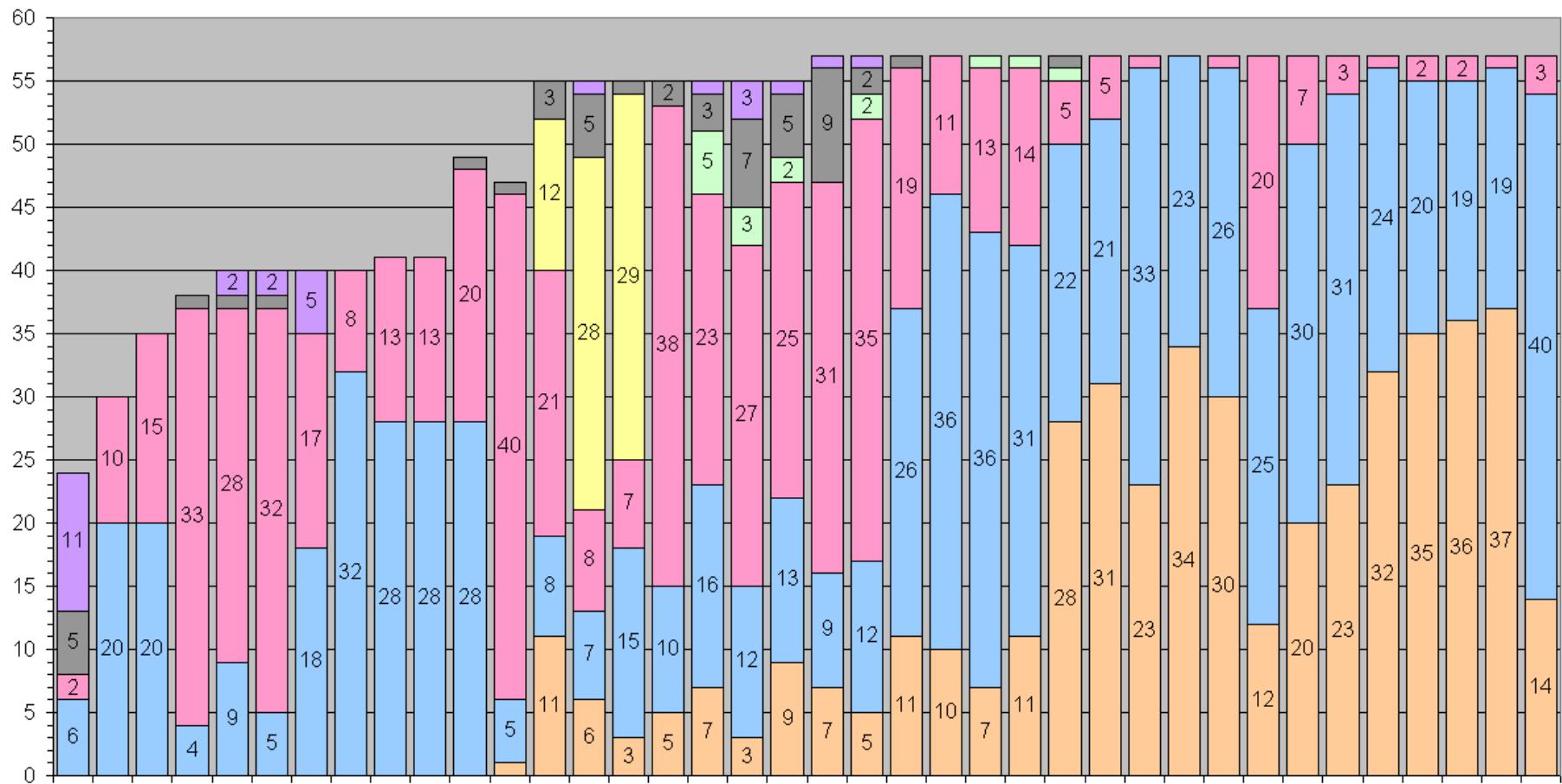
Andy Teucher

2018/01/30

	A	B	C	D	E	F	G
1	path	name	photographer	title	description	depicted_people	depicted_place
2	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Álvaro-Enrique-2.jpg	hayfestival-2016-Álvaro-Enrique-2.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Álvaro Enrique			Hay Festival
3	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-band.jpg	hayfestival-2016-band.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Band			Hay Festival
4	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-beatrix-potter-1.jpg	hayfestival-2016-beatrix-potter-1.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Beatrix Potter posing			Hay Festival
5	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-beatrix-potter-book.jpg	hayfestival-2016-beatrix-potter-book.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Beatrix Potter with book			Hay Festival
6	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-beatrix-potter-gesture.jpg	hayfestival-2016-beatrix-potter-gesture.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Beatrix Potter gesturing			Hay Festival
7	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-beatrix-potter-reading.jpg	hayfestival-2016-beatrix-potter-reading.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Beatrix Potter reading			Hay Festival
8	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-bookcase.jpg	hayfestival-2016-bookcase.jpg	Andrew Lih (User:Fuzheado)	Hay Festival 2016 - Beatrix Potter reading			Hay Festival
9	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-booktable-shadow.jpg	hayfestival-2016-booktable-shadow.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
10	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-broton-essiedu-peake.jpg	hayfestival-2016-broton-essiedu-peake.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
11	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Bruce-Robinson-portrait-2.jpg	hayfestival-2016-Bruce-Robinson-portrait-2.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
12	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Bruce-Robinson-portrait.jpg	hayfestival-2016-Bruce-Robinson-portrait.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
13	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-bus.jpg	hayfestival-2016-bus.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
14	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Caitlin-Moran-crowd.jpg	hayfestival-2016-Caitlin-Moran-crowd.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
15	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Caitlin-Moran-cu-face.jpg	hayfestival-2016-Caitlin-Moran-cu-face.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
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19	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Caitlin-Moran-signboard.jpg	hayfestival-2016-Caitlin-Moran-signboard.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
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31	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-crowd.jpg	hayfestival-2016-crowd.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
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33	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Edna-O'Brien-1.jpg	hayfestival-2016-Edna-O'Brien-1.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
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37	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Enrique-Vasquez.jpg	hayfestival-2016-Enrique-Vasquez.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
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39	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-flag2.jpg	hayfestival-2016-flag2.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
40	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Fleur-Alexander-1.jpg	hayfestival-2016-Fleur-Alexander-1.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
41	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Fleur-Alexander-2.jpg	hayfestival-2016-Fleur-Alexander-2.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
42	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Fleur-Alexander-3.jpg	hayfestival-2016-Fleur-Alexander-3.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
43	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Fong-Xin-wide.jpg	hayfestival-2016-Fong-Xin-wide.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
44	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Fong-Xin.jpg	hayfestival-2016-Fong-Xin.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
45	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-Goldsmit-Enrique-Vasquez.jpg	hayfestival-2016-Goldsmit-Enrique-Vasquez.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
46	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-halfway.jpg	hayfestival-2016-halfway.jpg	Andrew Lih (User:Fuzheado)				Hay Festival
47	/Users/allh/Documents/Wikipedia/Hay Festival/photos/hayfestival-2016-haysign-day.jpg	hayfestival-2016-haysign-day.jpg	Andrew Lih (User:Fuzheado)				Hay Festival







DEMOGRAPHICS BY GENDER

Gender	Platform	Percentage
MEN - 40%	20% of users	
MEN - 40%	10% of mobile users	
MEN - 40%	30% of females	
MEN - 40%	40% of Facebook Likes	
MEN - 40%	30% of Pinterest Pins	
WOMEN - 60%	60% of users	
WOMEN - 60%	40% of mobile users	
WOMEN - 60%	70% of females	
WOMEN - 60%	30% of Facebook Likes	
WOMEN - 60%	30% of Pinterest Pins	

FOUR STEP PROCESS CHART

- Define Objective
- Plan
- Create
- Publish

Each step includes a brief description: "Find out what you want to accomplish. Put it in simple terms. Write down your goal in the middle of the box.", "Find out what you need to accomplish. Put it in simple terms. Write down your needs in the middle of the box.", "Find out what you need to express. Put it in simple terms. Write down your message in the middle of the box.", and "Find out what you need to do to publish. Put it in simple terms. Write down your plan in the middle of the box."

Green Chalkboard

SOCIAL MEDIA FLOW CHART

- TWITTER CONVERSATIONS**: Write a little bit here about the information you or people can understand its relevance.
- FACEBOOK CONVERSATIONS**: Write a little bit here about the information you or people can understand its relevance.
- LINKEDIN CONVERSATIONS**: Write a little bit here about the information you or people can understand its relevance.

REGIONAL DEMOGRAPHICS

Dusty Chalkboard

TWO KEY IDEAS PRESENTED TOGETHER

KEY IDEA NUMBER ONE

Go ahead and place your text about one of your ideas in this lovely box right here. Once the people are engaged with your first idea, they will be more open to your second idea. Be sure to keep your text short and sweet so people will be able to read your text and listen to you simultaneously.

KEY IDEA NUMBER TWO

Put your text about the second of your ideas in this lovely box right here. Once the people are engaged with your first idea, they will be more open to your second idea. Be sure to keep your text short and sweet so people will be able to read your text and listen to you simultaneously.

A VIDEO CASE STUDY

VIDEO TITLE...2012

DIRECTOR AND PRODUCER

SYNOPSIS

We are confident that you will love this video to be of great value to you and your audience. This video will be perfect for the people who have been working on this video since you have cut through all 12 hours of its production to bring you this. Get some popcorn and get ready to sit back and relax.

Black Chalkboard

6 / 29

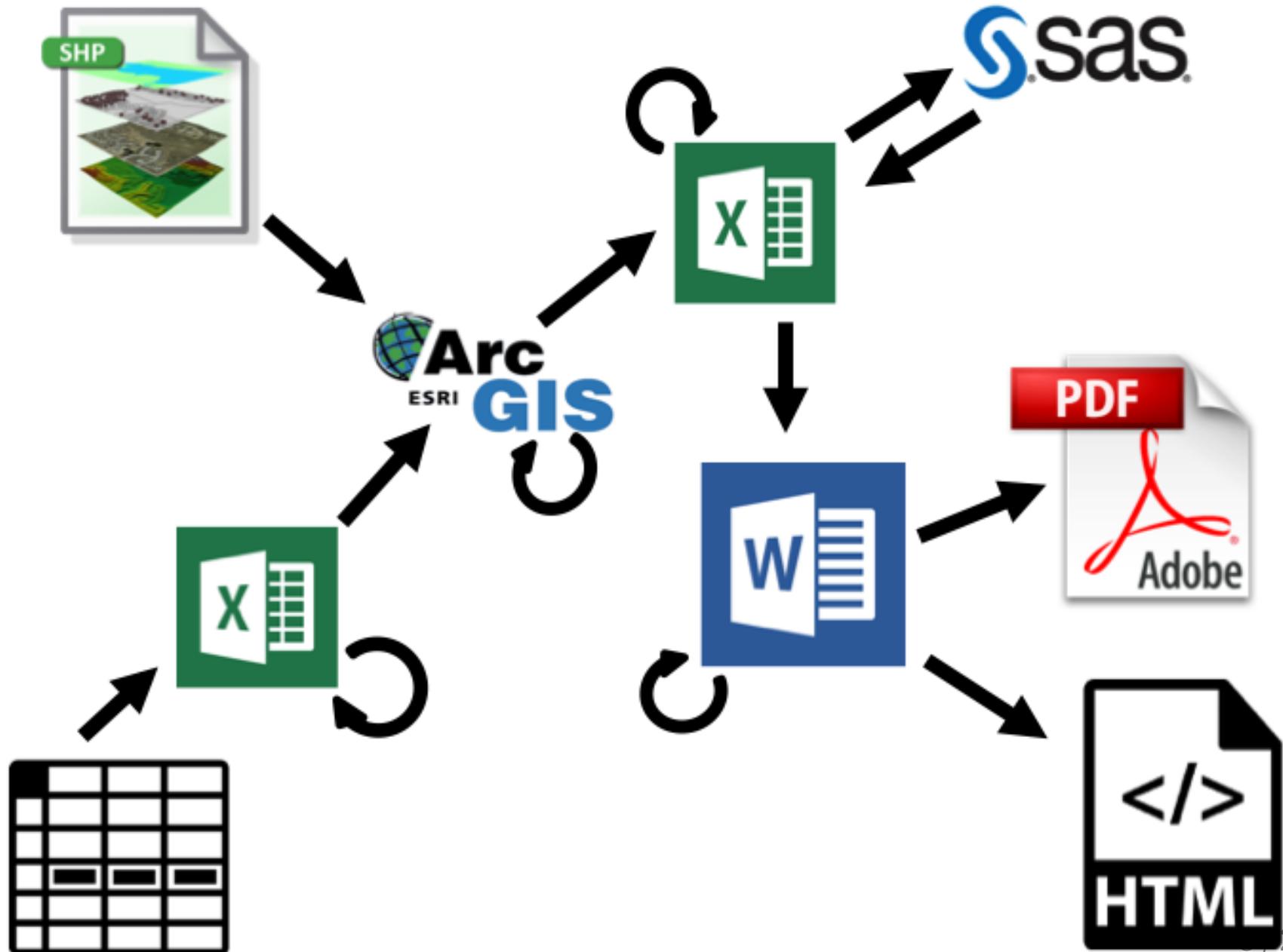


"Thank you for your hard work, this is exactly what we were looking for!"

"But, I think I gave you the wrong version of shapefile #2. Oh, and that Excel spreadsheet has been updated."

"But, I think I gave you the wrong version of shapefile
#2. Oh, and that Excel spreadsheet has been
updated."





Open source programming language

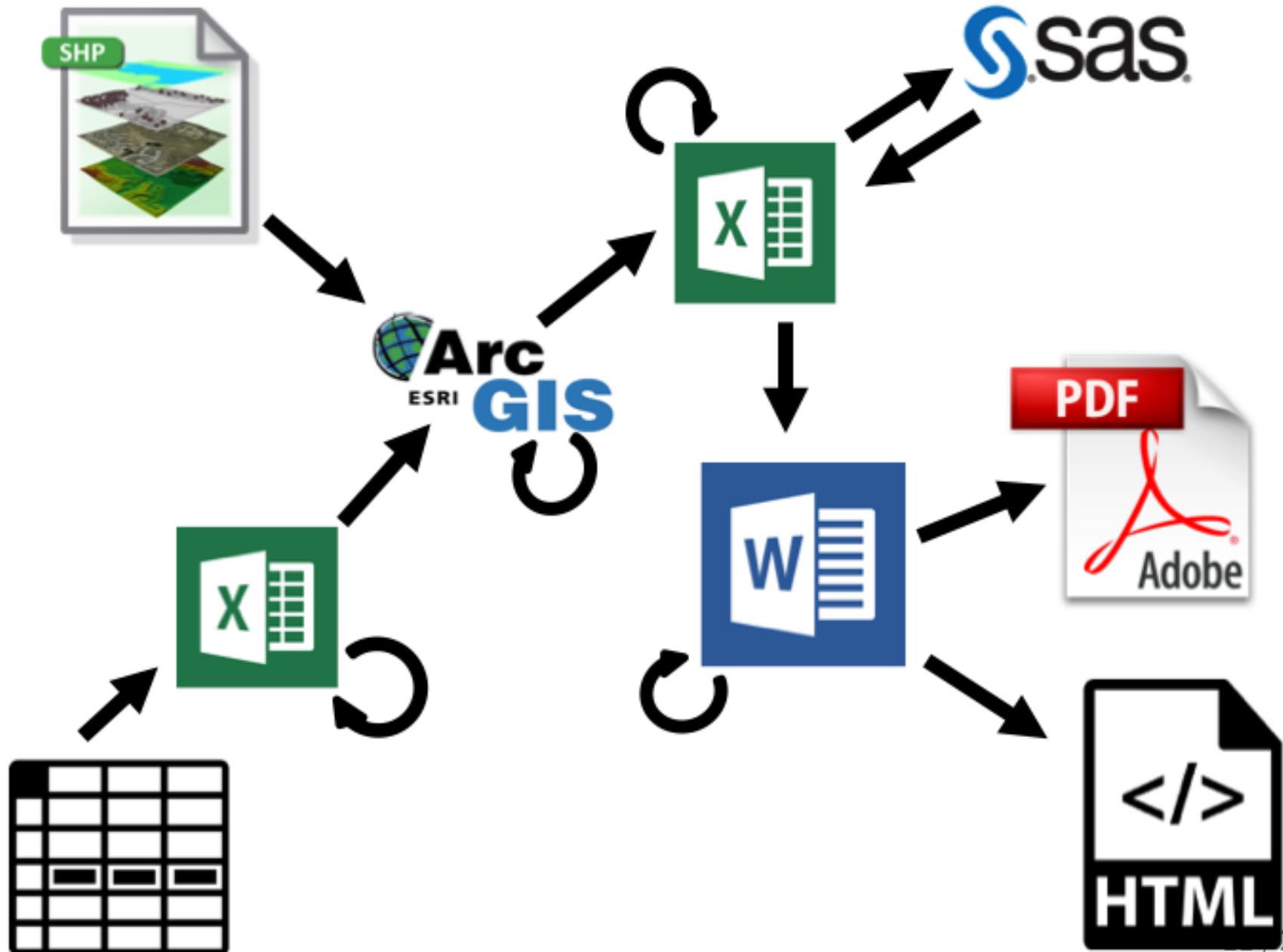
Data analysis focus

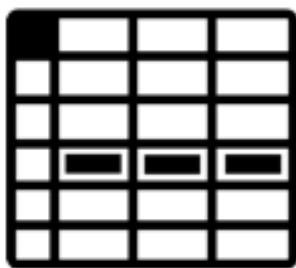
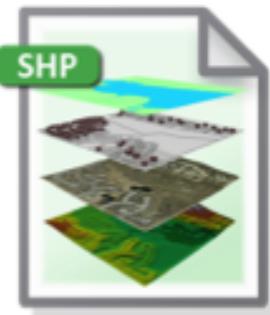
Cross-platform



Efficiency







Reproducibility



Reliability



Versatility

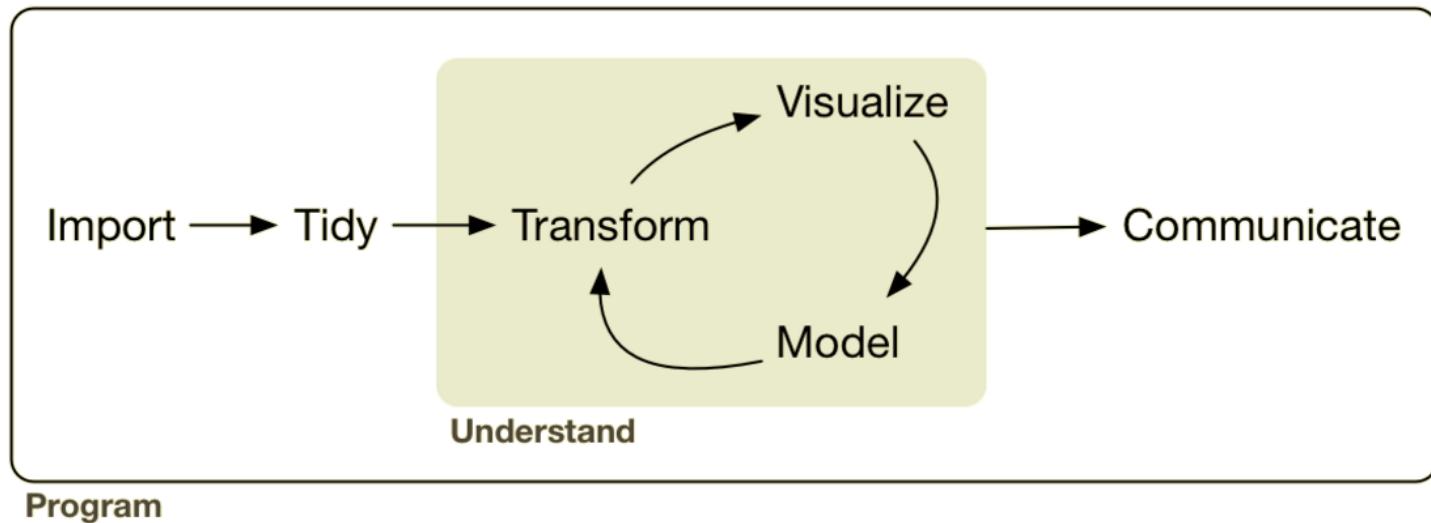


Community

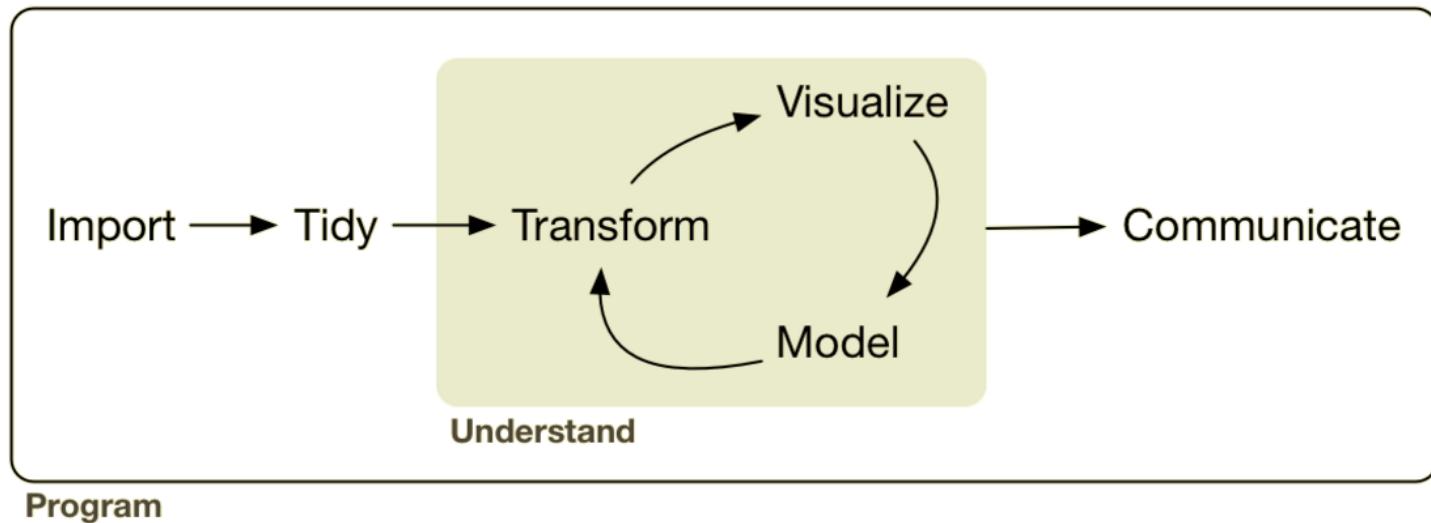
'Faces of R' by Maelle Salmon



Data Science



Geographical Data Science



Geographic Information Systems (GIS)

VS

Geographic Data Science (GDS)¹

Attribute	GIS	GDS
Home disciplines	Geography	Geography, Computing, Statistics
Software focus	Graphical User Interface	Code
Reproducibility	Minimal	Maximal

[1] Geocomputation with R, [Table 1.1](#)



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ConnectVictoria App

Council Webcasting

Development Tracker

Document Library

Garbage Collection Reminders

MyCity Online

Online Transactions

Open Data

Open Data Licence

ParkVictoria App

Recreation Registration

Open Data

Welcome to the City of Victoria's Open Data Catalogue.

We will continue to add data to this page as it becomes available. Please review the City's [Open Data Licence](#).

Mapping data can also be downloaded from [VicMap](#), an interactive, multi-layered map.

Financial Data

Data Set	CSV	KML	SHP	Other	Date Added or Updated
Statement of Council remuneration and expenses paid - 2016	CSV				June 2017
Statement of employee remuneration and expenses paid - 2016	CSV				June 2017
Statement of grants paid - 2016	CSV				June 2017

Contact Info

Email us to request data or report a problem

Related Links

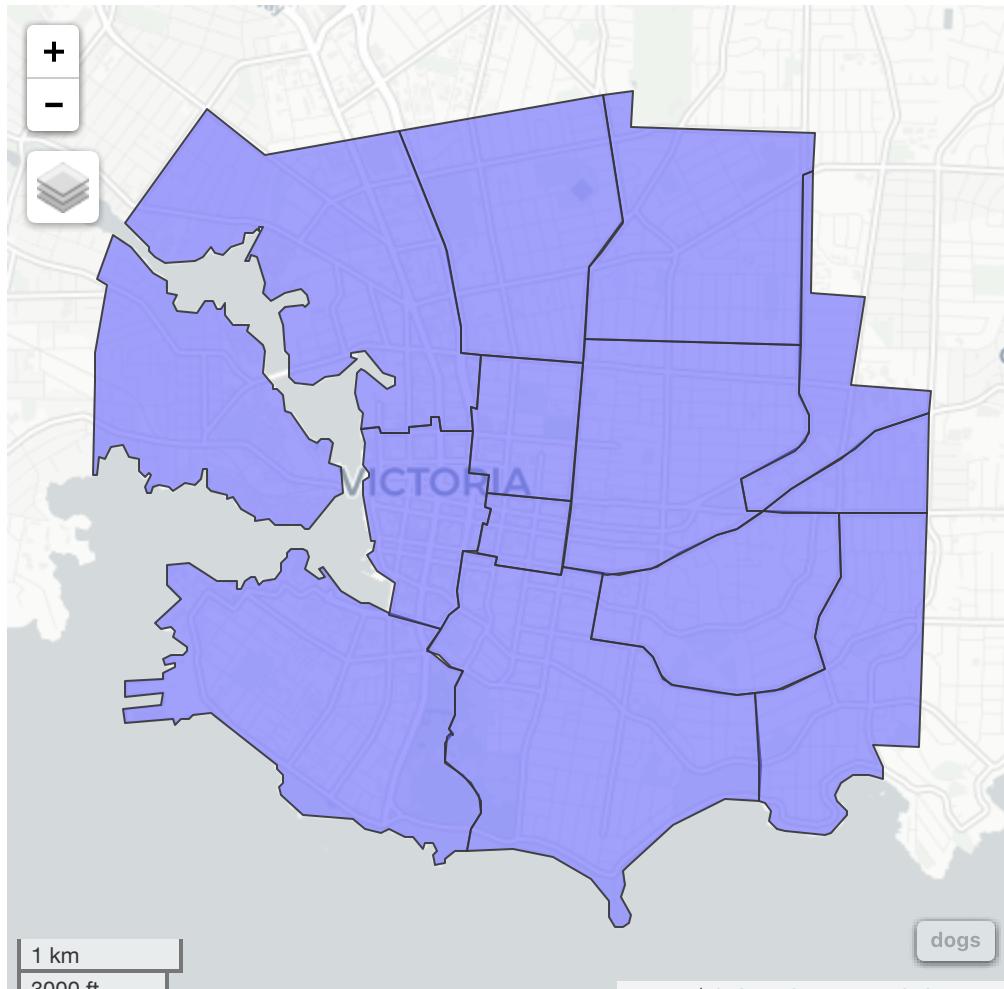
» [DataBC](#)

» [Government of Canada Open Data Portal](#)

» [VicMap](#)

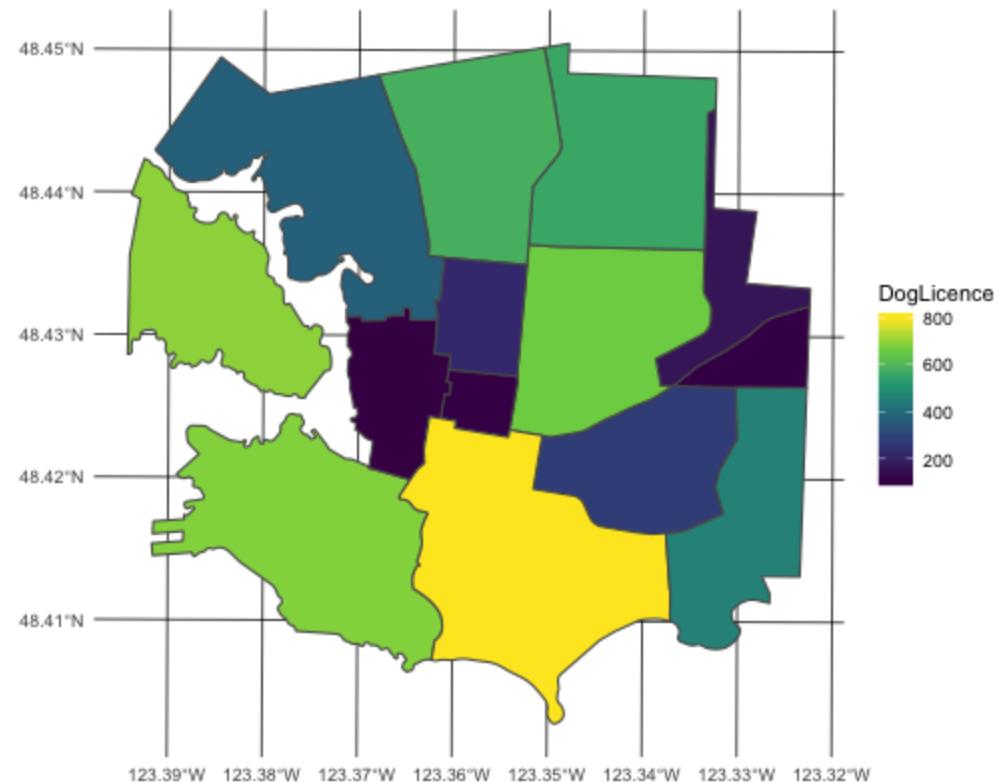


```
library(sf)
library(mapview)
dogs <- read_sf("data/dogs/DogsByNeighbourhood.shp")
mapview(dogs)
```

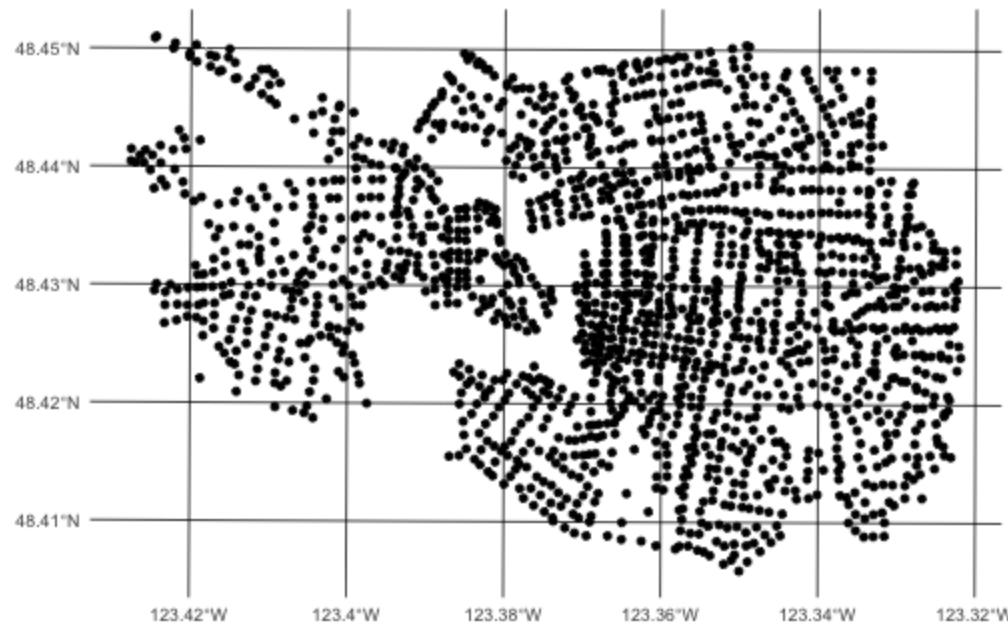


```
library(ggplot2)

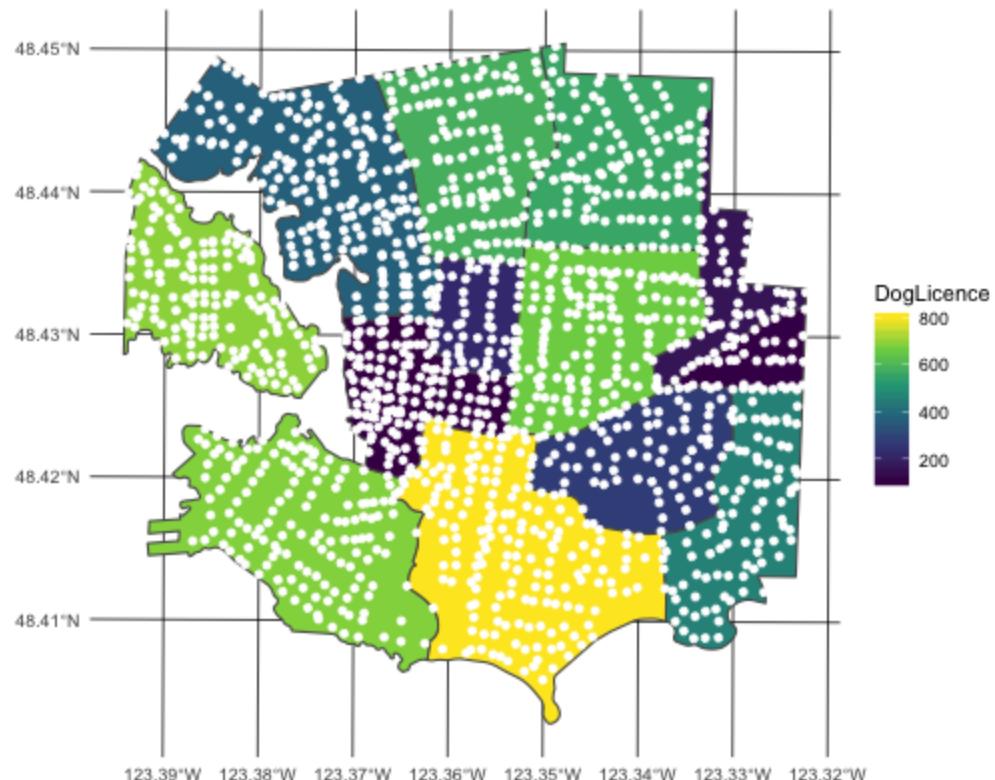
ggplot() +
  geom_sf(data = dogs, aes(fill = DogLicence)) +
  scale_fill_viridis_c() + theme_minimal()
```



```
hydrants <- read_sf("data/hydrants/Hydrants.shp")  
  
ggplot() +  
  geom_sf(data = hydrants) +  
  theme_minimal()
```



```
hydrants <- st_intersection(hydrants, st_geometry(dogs))  
ggplot() +  
  geom_sf(data = dogs, aes(fill = DogLicence)) +  
  geom_sf(data = hydrants, colour = "white") +  
  scale_fill_viridis_c() + theme_minimal()
```



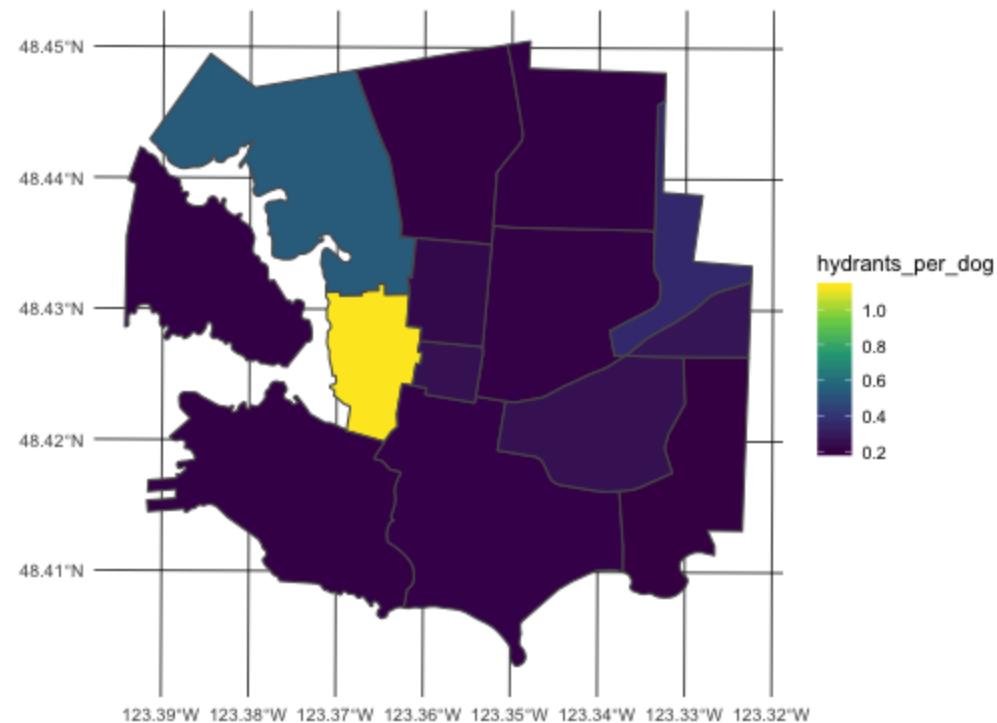
```

dogs_and_hydrants <- st_join(dogs, hydrants) %>%
  group_by(Neighbour) %>%
  summarize(licences = max(DogLicence),
            n_hydrants = length(unique(ID)),
            hydrants_per_dog = n_hydrants / licences)

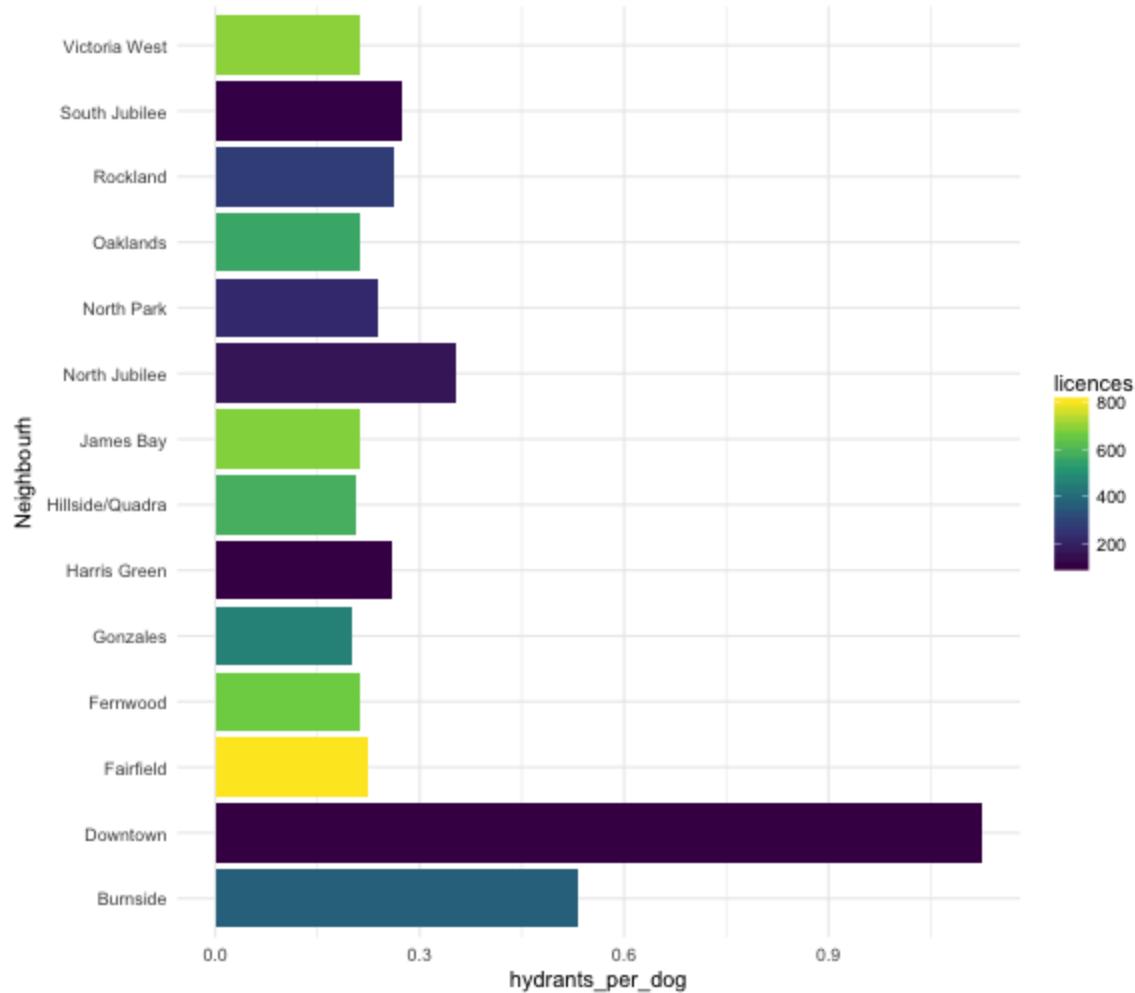
```

Neighbour	licences	n_hydrants	hydrants_per_dog
Burnside	366	195	0.5327869
Downtown	104	117	1.1250000
Fairfield	802	180	0.2244389
Fernwood	664	142	0.2138554
Gonzales	460	92	0.2000000
Harris Green	108	28	0.2592593
Hillside/Quadra	582	121	0.2079038
James Bay	684	145	0.2119883
North Jubilee	159	56	0.3522013
North Park	219	52	0.2374429
Oaklands	559	119	0.2128801
Rockland	276	72	0.2608696
South Jubilee	112	31	0.3743363

```
ggplot() +  
  geom_sf(data = dogs_and_hydrants, aes(fill = hydrants_per_dog)) +  
  scale_fill_viridis_c() + theme_minimal()
```



```
ggplot(dogs_and_hydrants, aes(x = Neighbour, y = hydrants_per_dog))  
  geom_col(aes(fill = licences)) + scale_fill_viridis_c() +  
  coord_flip() + theme_minimal()
```



Me:

Twitter: @andyteucher

GitHub: @ateucher

Resources:

<http://fg2re.sellorm.com/>

<http://r4ds.had.co.nz/>

<https://geocompr.robinlovelace.net/>

<http://r-spatial.org/>

Source code for this presentation available [here](#)

Made with [xaringan](#)

```
leaflet() %>%  
  addProviderTiles("Stamen.TonerLite") %>%  
  addAwesomeMarkers(lng = -123.369407, lat = 48.428881,  
    label = paste0("<h3>", emoji("beer"), "</h3>"),  
    labelOptions = labelOptions(noHide = TRUE))
```

