

The background of the slide is a grayscale photograph of a map with several black pushpins. The map shows street names and landmarks, with 'VALCOT SQUARE' and 'WEST' being clearly visible. The pushpins are scattered across the map, with one in the foreground and others in the background, creating a sense of depth. A solid blue vertical bar is positioned on the left side of the slide, containing the title and date.

GPS SUBGROUP UPDATES

OCTOBER 21ST, 2020

gps2space Package

1. Building spatial data from raw Lat/Long coordinate pairs

```
gdf = geodf.df_to_gdf(df, x='your_long_column', y='your_lat_column')
```

Please note:

- df is your dataframe with raw Lat/Long coordinate pairs
- x is the column name that indicates the longitude
- y is the column name that indicates the latitude
- You MUST pass the longitude to parameter x and latitude to parameter y
- This function returns an unprojected spatial dataframe

gps2space Package (Cont.)

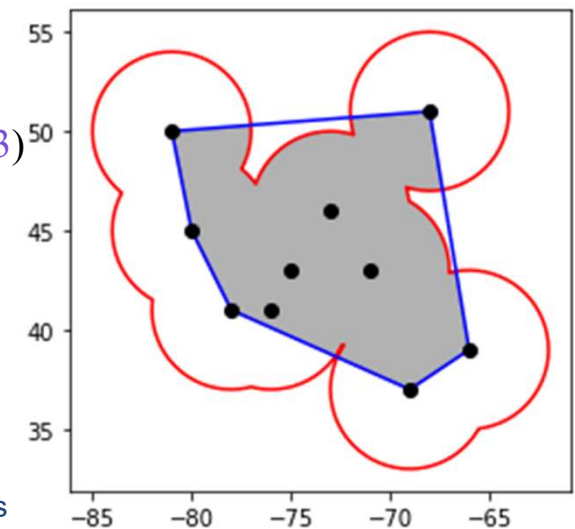
2. Constructing Buffer- and Convex hull-based activity and shared space

```
buffer_space = space.buffer_space(gdf, dist=100, dissolve='time_variable', proj=2163)
```

```
convex_space = space.convex_space(gdf, group='time_variable', proj=2163)
```

Please note:

- `gdf` is your unprojected spatial dataframe
- `dist` is the buffer distance in meters
- `dissolve/group` is the level of aggregating from which you dissolve/group points to form polygons
- `proj` is the EPSG codes for your projection. If working with spatial analysis in the US, we recommended using 2163
- Buffer- and Convex hull-based measures have both pros and cons, chose one that makes more sense for your research questions



gps2space Package (Cont.)

3. Measuring the nearest distance from origin and destination

`distance = dist.dist_to_point(gdf_origin, gdf_destination, proj=2163)`

Please note:

- `gdf_origin` is your place of origin
- `gdf_destination` is your place of destination
- `proj` is the EPSG codes for your projection. If working with spatial analysis in the US, we recommended using 2163
- This function returns a column called `dist2point` which is the nearest distance in meter between your origin and destination. You can then rename this column to whatever you want and change the unit, for example, from meter to mile

Documentation for GPS2space:

<https://gps2space.readthedocs.io/en/latest/> or Google “gps2space”

OSM V.S. Infogroup (Results from gps2space)

	Total Features		Based on demo dataset (N=202445)						
	OSM	IG	OSM further	OSM further %	IG further	IG further %	MinDiff	MaxDiff	AvgDiff
Alcohol	614089	38248	194154	95.9	8291	4.1	0	69645	735
ArtGallery	55942	19437	200357	98.97	2088	1.03	0	104210	1655
Bakery	601698	41992	164979	81.49	37466	18.51	0	163014	542
Bar	1352388	70337	133329	65.86	69116	34.14	0	33661	495
Convenience	2527585	102520	112334	55.49	90111	44.51	0	39307	310
GasStation	4171177	106712	92007	45.45	110438	54.55	0	27186	313
Gym	6490	34630	202436	100	9	0	110	518352	17162
Hotel	2225140	82446	160227	79.15	42218	20.85	0	52479	327
Library	481384	21694	151610	74.89	50835	25.11	0	60023	285
Pharmacy	1279873	72614	66086	32.64	136359	67.36	0	50079	533
Restaurant	10477524	625872	185307	91.53	17138	8.47	0	28106	187
Supermarket	1834637	101439	186791	92.27	15654	7.73	0	31134	545

Appendixes

