



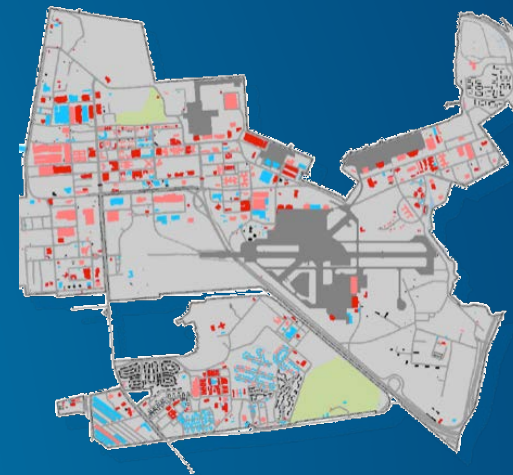
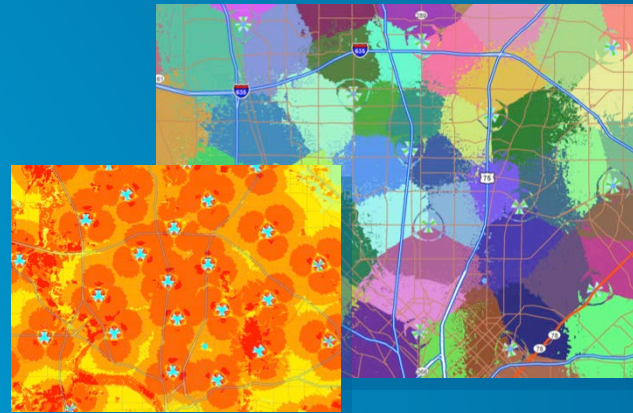
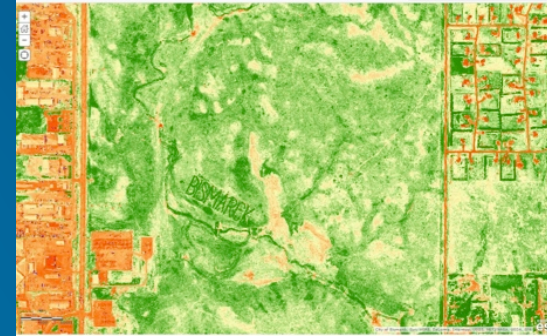
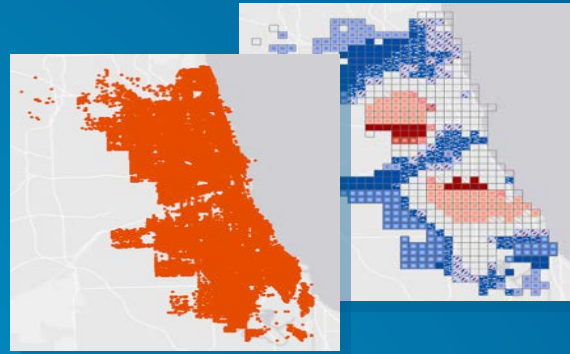
Understanding the Four Basic Types of Analysis

Paul Trevillion - Esri

Michael Sarhan - Esri

What are the four basic types of analysis?

- Proximity
- Overlay
- Statistical
- Temporal

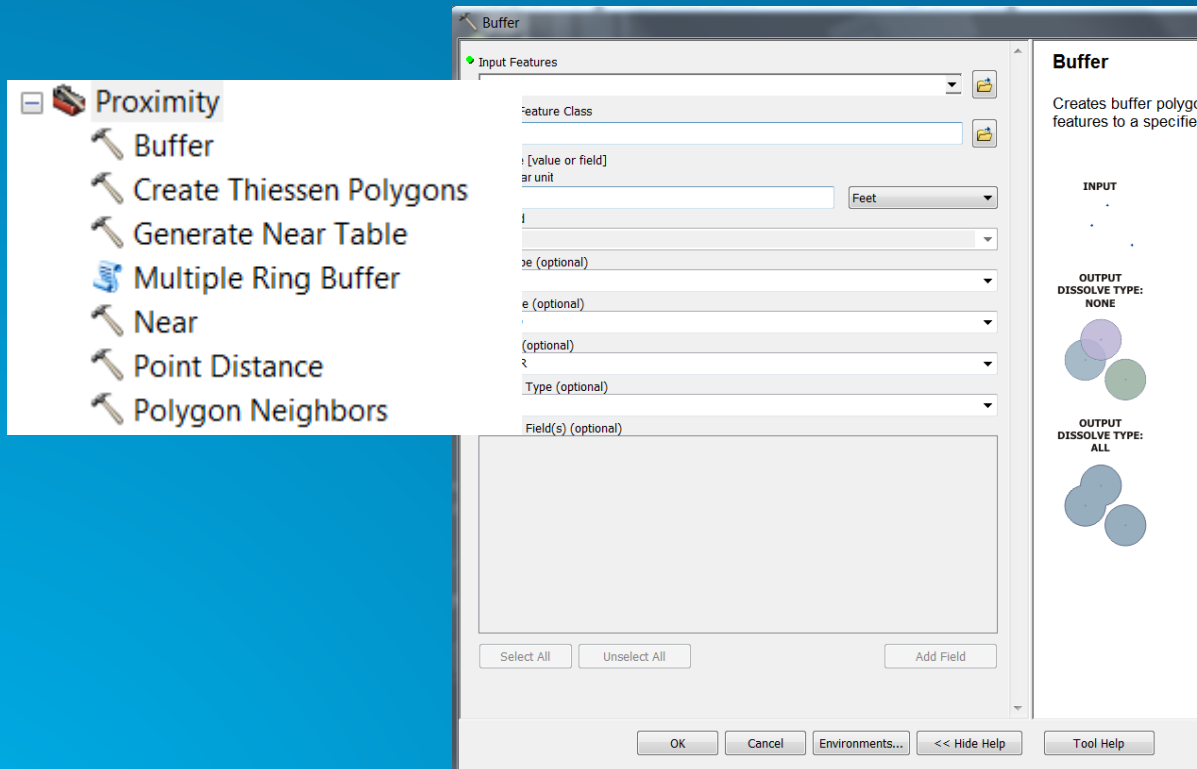


Proximity

Michael Sarhan

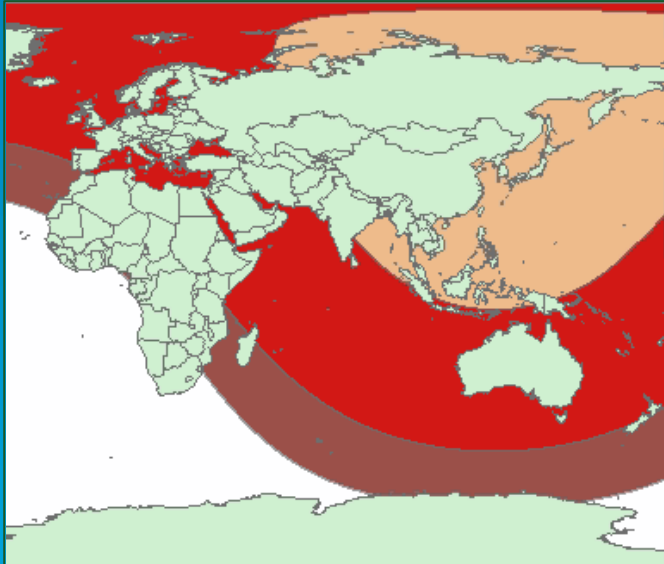
What is proximity analysis?

Buffer zones around a school

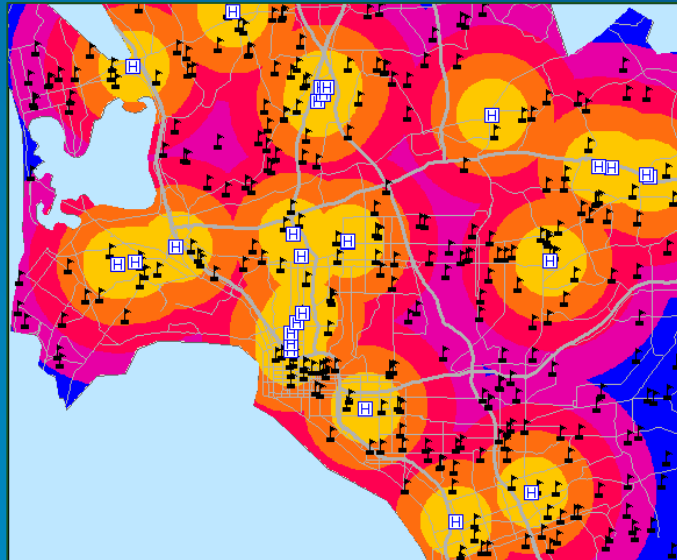


How do ArcGIS tools measure proximity?

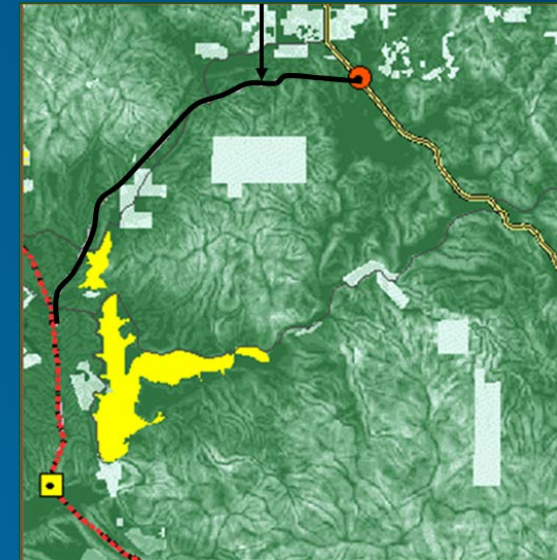
Geodesic



Euclidean distance

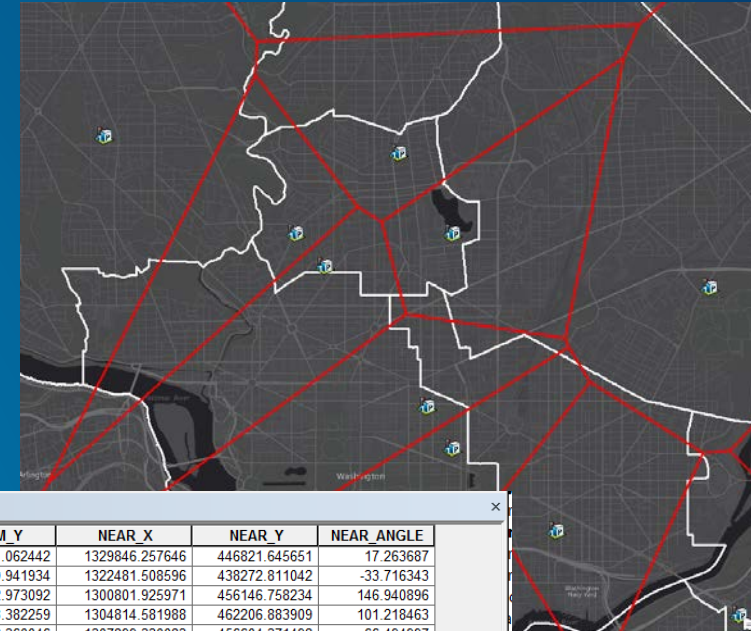
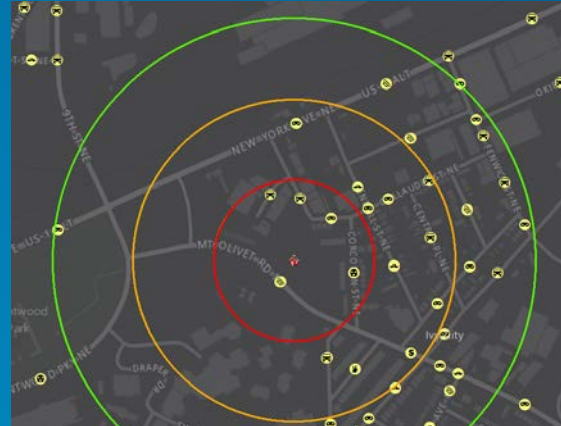


Least-cost path



Categories of Proximity Analysis

- Area Expanding
- Numeric value
- Linear Measure



Police_Stations_GenerateNear

OBJECTID *	IN_FID	NEAR_FID	NEAR_DIST	FROM_X	FROM_Y	NEAR_X	NEAR_Y	NEAR_ANGLE
1	1	88	1316.11549	1328589.434372	446431.062442	1329846.257646	446821.645651	17.263687
2	2	41	1490.106531	1321242.044212	439099.941934	1322481.508596	438272.811042	-33.716343
3	3	45	868.527535	1301529.846103	455672.973092	1300801.925971	456146.758234	146.940896
4	4	5	1165.77671	1305041.384356	461063.382259	1304814.581988	462206.883909	101.218463
5	5	4	695.715358	1307621.858525	457242.360046	1307899.330083	456604.371492	-66.494997
6	6	94	3640.183183	1319833.582462	454655.685101	1318853.399054	458161.419559	105.62069
7	7	113	819.451123	1312549.476295	443106.003476	1311917.783004	443627.984059	140.432408
8	8	45	1276.244373	1300138.113322	457236.782301	1300801.925971	456146.758234	-58.659046
9	9	80	2595.388907	1306404.278612	448999.462817	1308373.221196	450690.411863	40.656338
10	10	41	1335.002532	1323811.36322	438155.685292	1322481.508596	438272.811042	174.966713
11	11	62	1787.537447	1308658.342345	440708.108337	1307173.533963	441703.414417	146.165014
12	12	37	1326.098033	1304539.285622	472154.993934	1303606.940046	471211.984009	-134.674187
13	13	80	3736.795888	1307626.290603	447029.027126	1308373.221196	450690.411863	78.469748
14	14	39	2291.931654	1291045.414972	461863.052576	1291867.134129	464002.615226	68.990244
15	15	79	694.870399	1321012.976428	432177.219559	1320647.686804	431586.111817	-121.715016



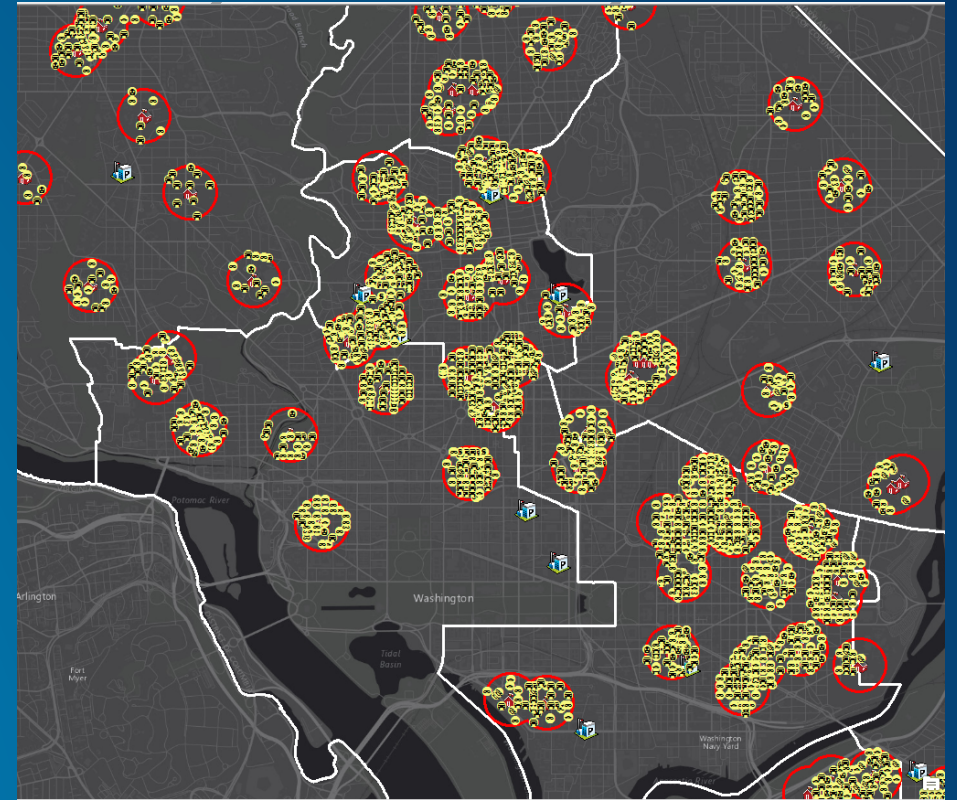
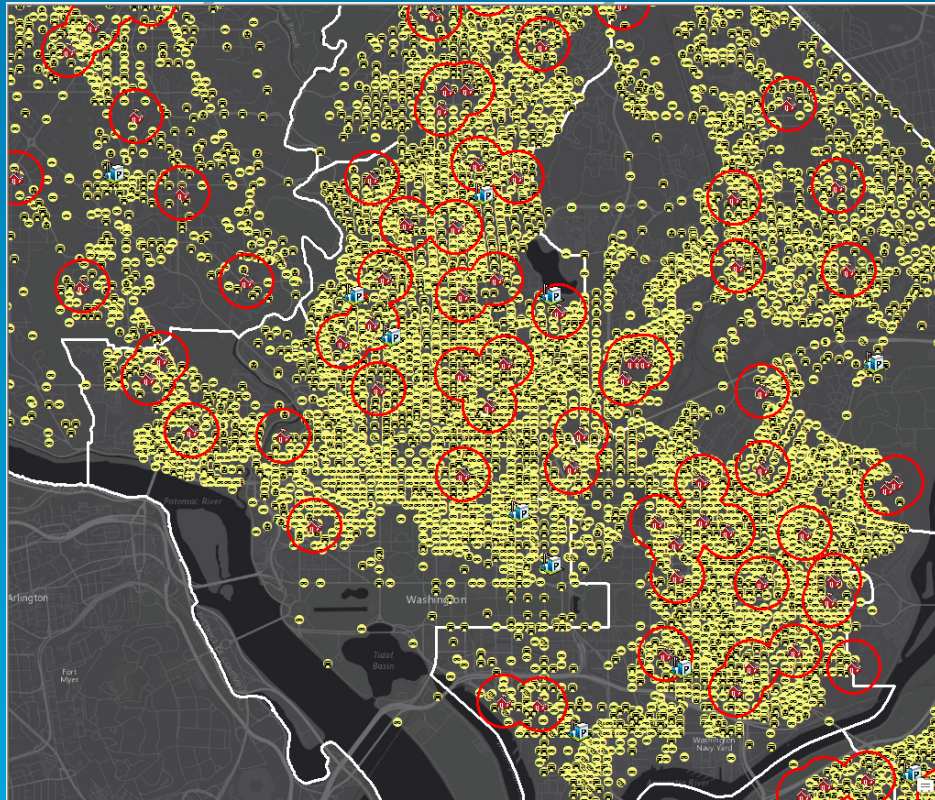
Proximity Demo

Paul Trevillion

Overlay

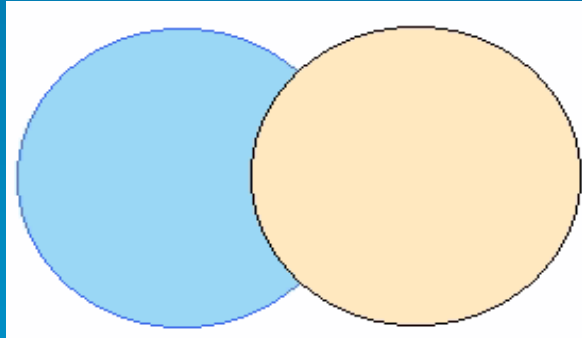
Paul Trevillion

Vector Overlay

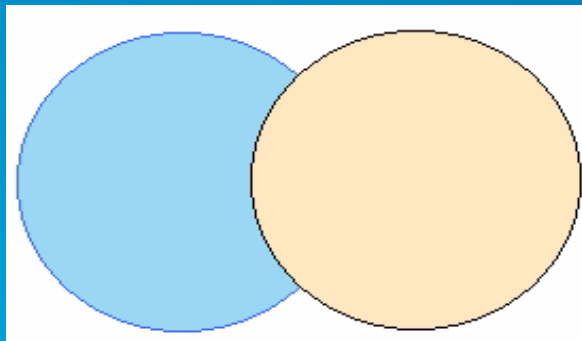
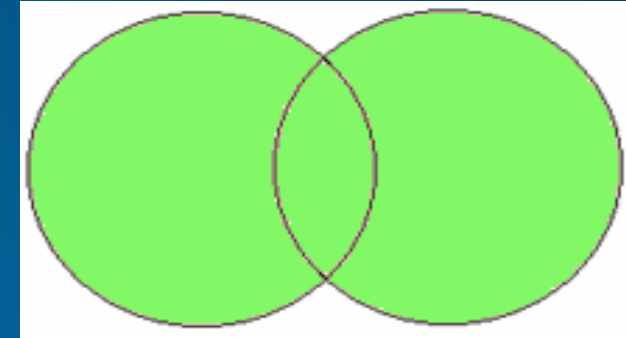


Which Schools have the most incidents crime nearby?

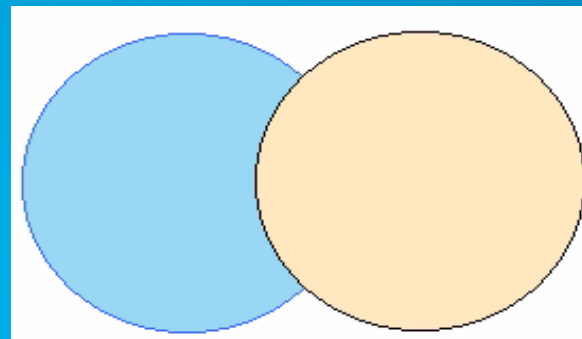
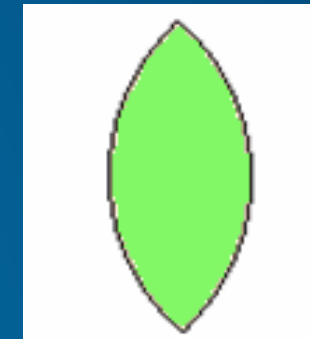
Overlay techniques



Union



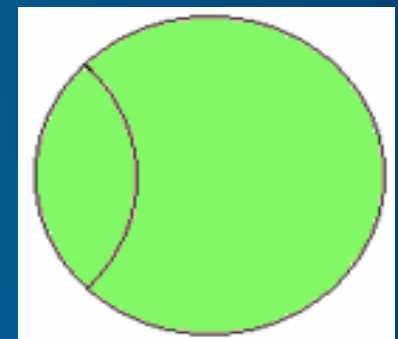
Intersect



Identity



OR



Apportioning attributes

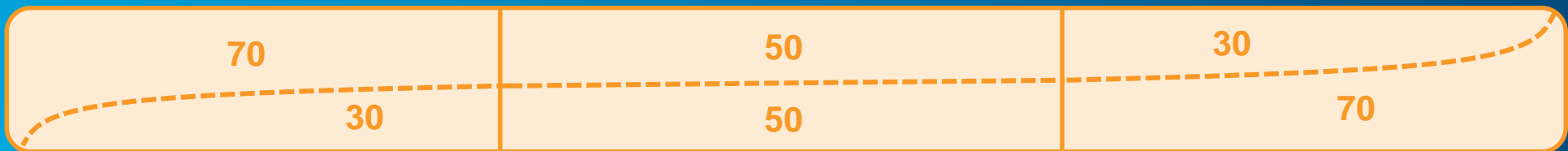
Before split



Without ratio policy



With ratio policy



Raster Overlay



Overlay Demo

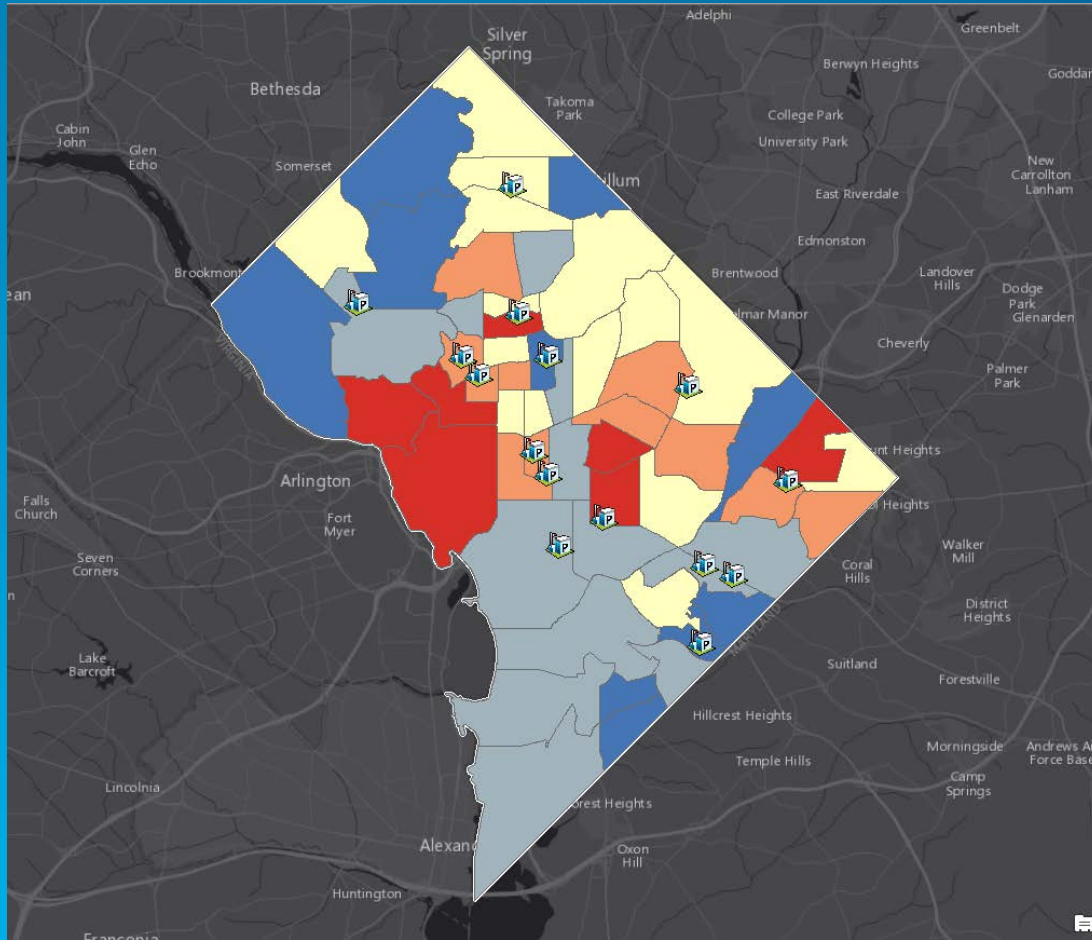
Michael Sarhan

Statistical Analysis

Michael Sarhan

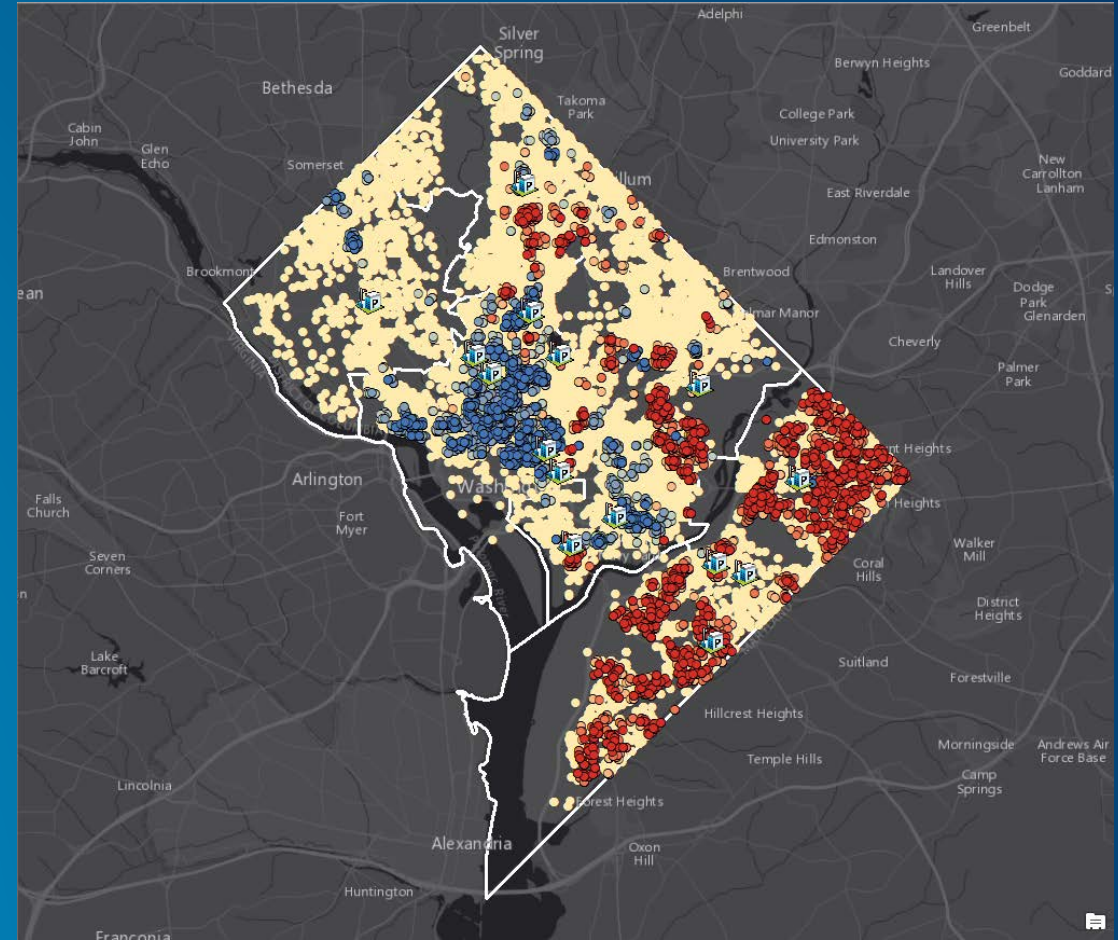
Types of Statistical Analysis

Descriptive Statistics



Percent of Total Crimes by Ward in the District of Columbia

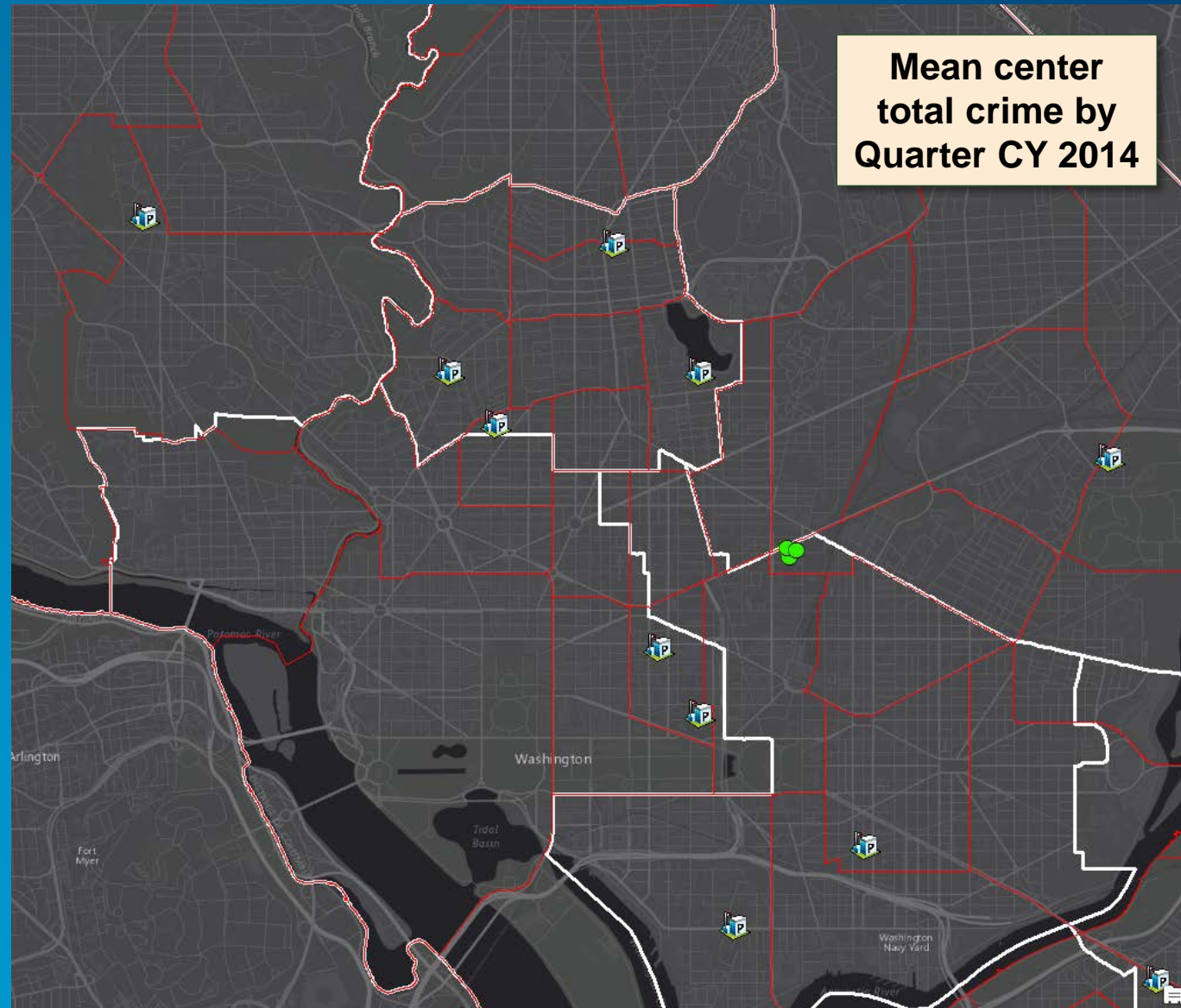
Inferential Statistics



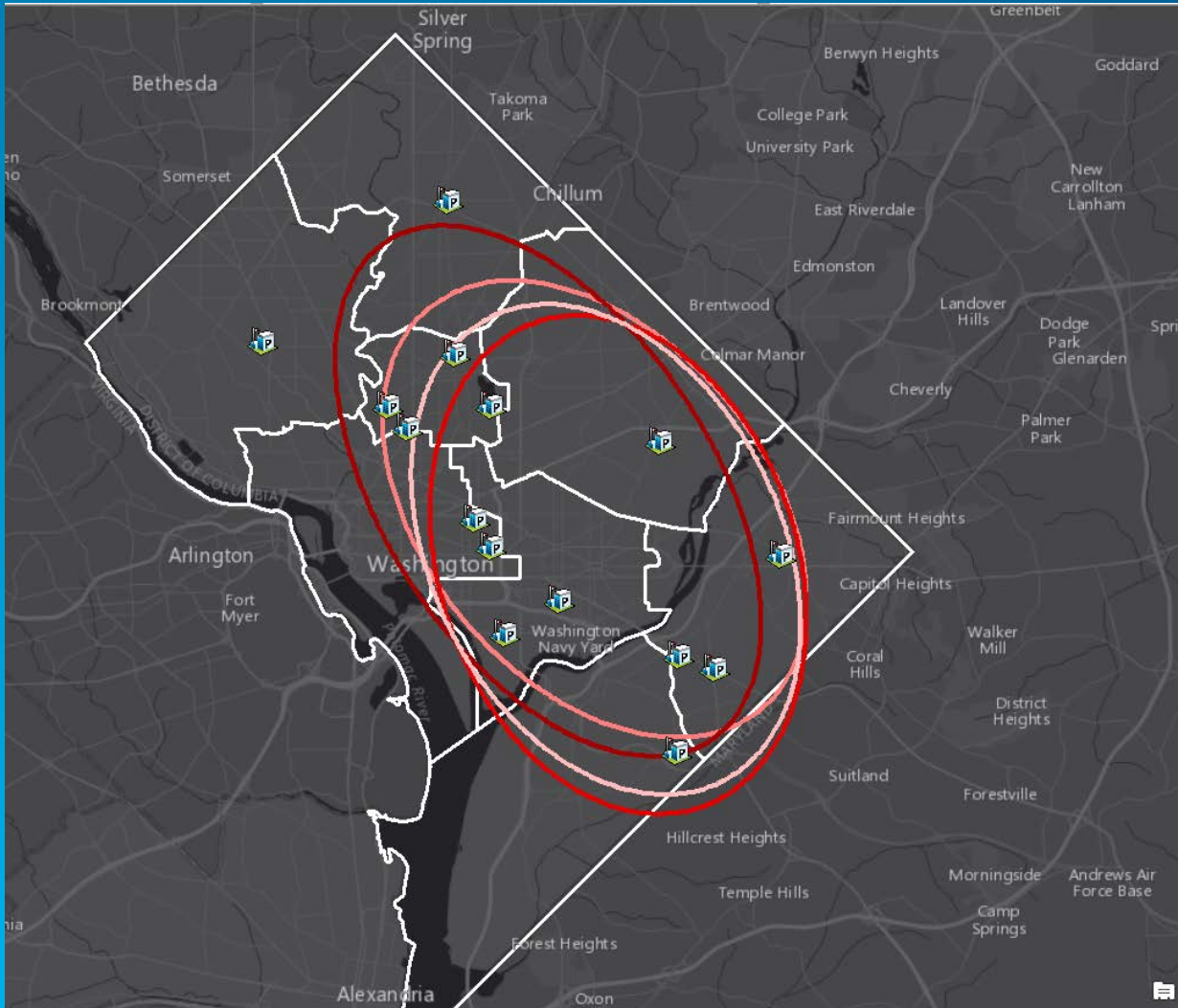
Hot Spot Analysis weighted on Violent crime in the District of Columbia

Descriptive Statistics

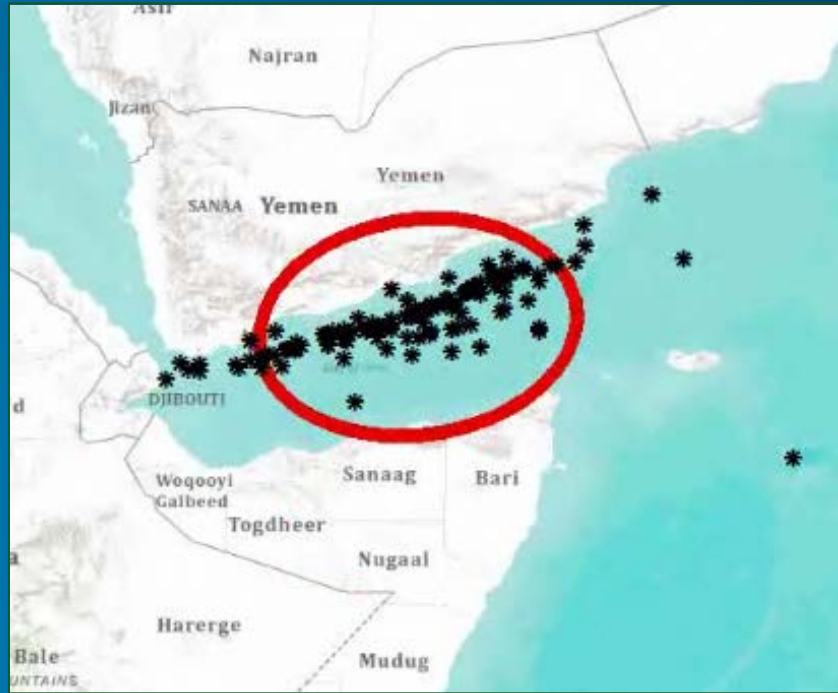
Mean Center



Descriptive Statistics



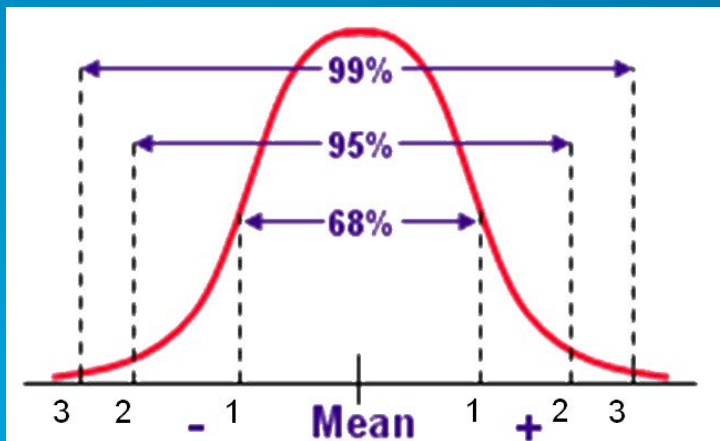
Standard
Deviational
Ellipses



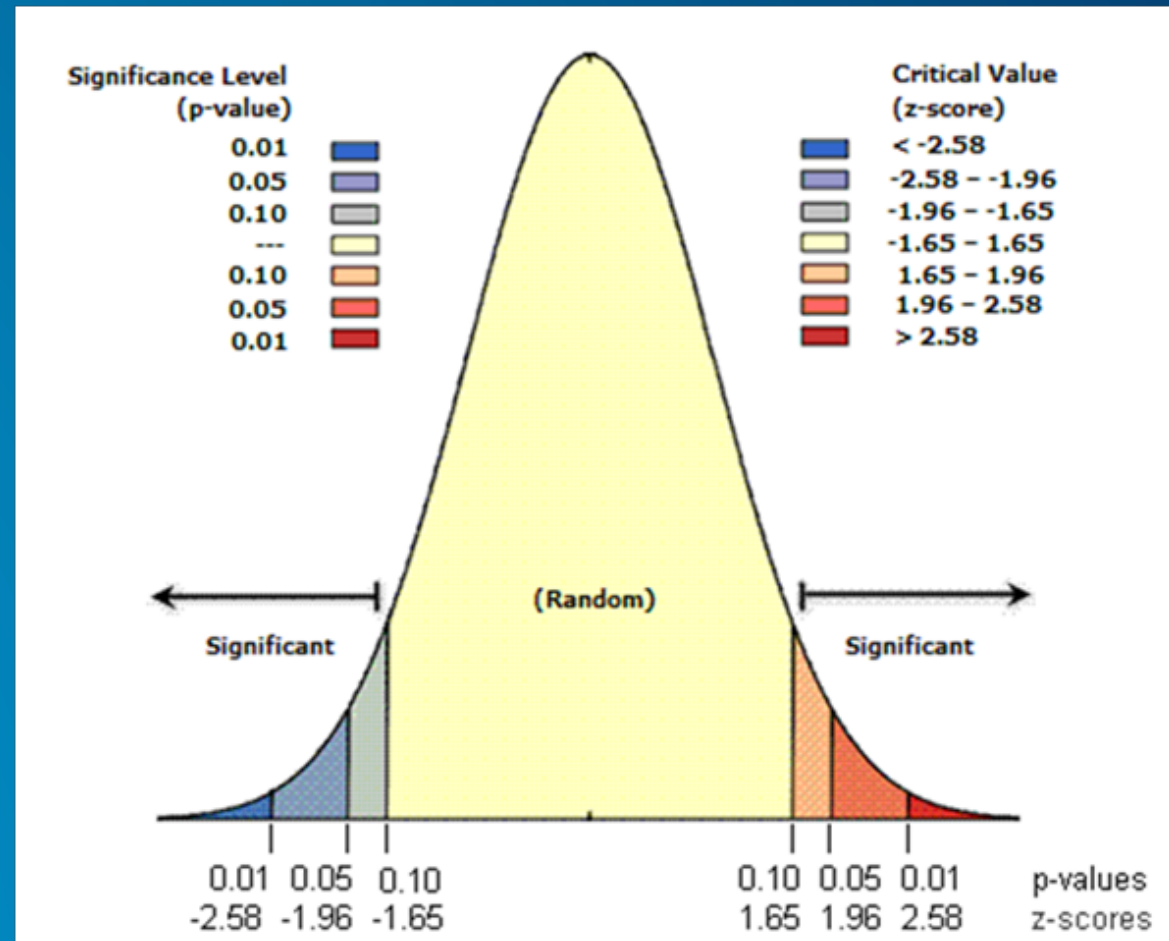
Working with data distributions

- Normal and statistically significant distributions

Normal distribution

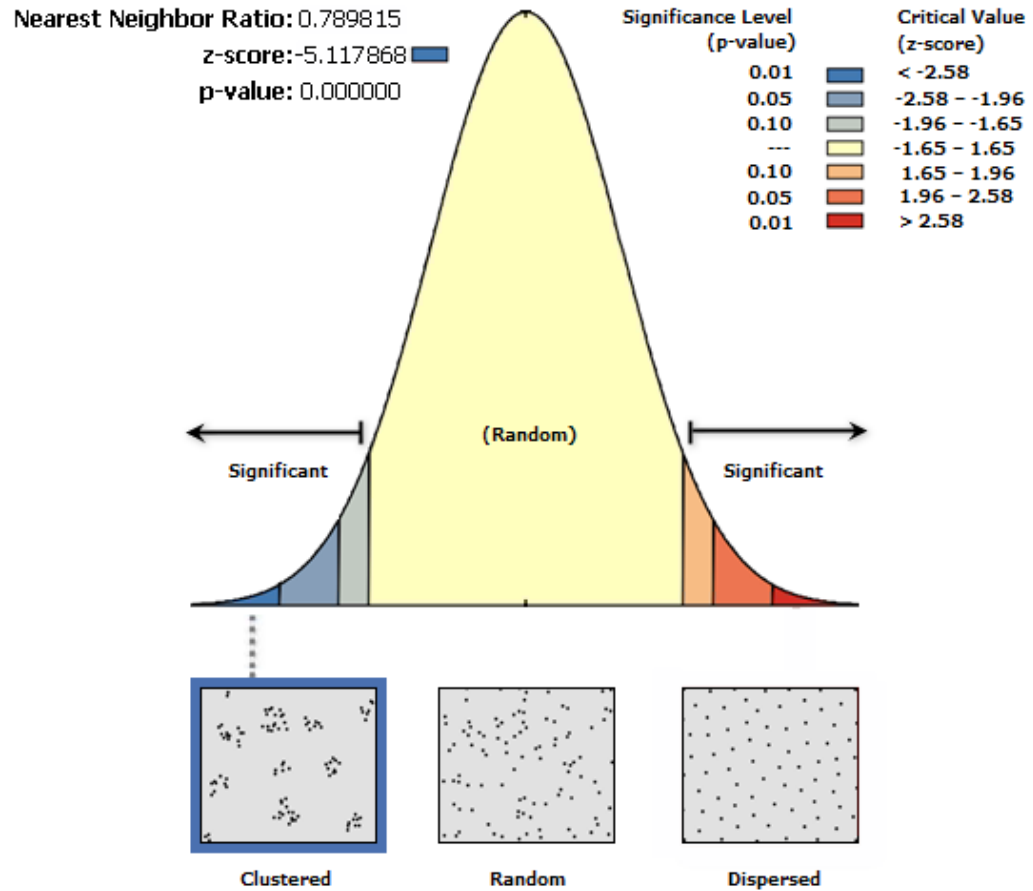


Standard deviation



Inferential Statistics

Average Nearest Neighbor Summary



The Average Nearest Neighbor tool

Dengue fever cases and households

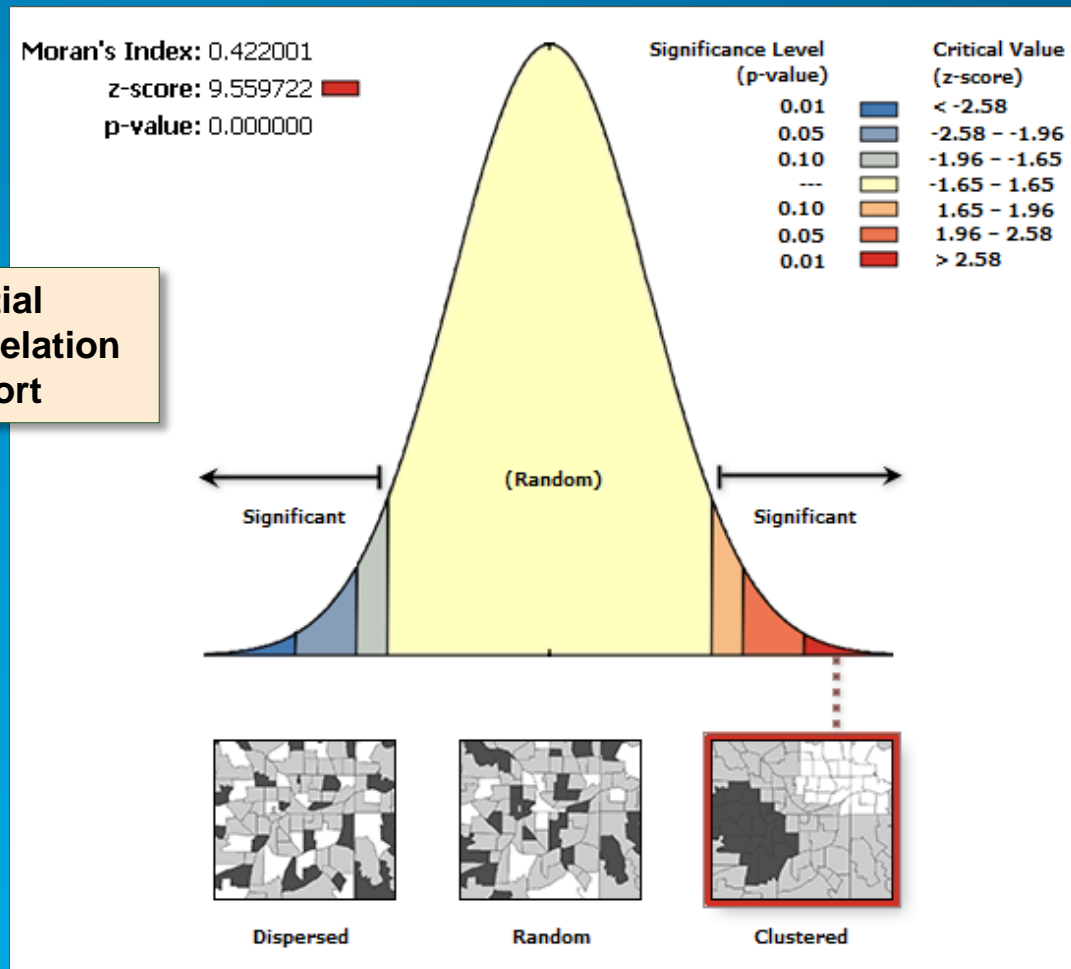


Inferential Statistics

- Measures distribution of features and attribute values

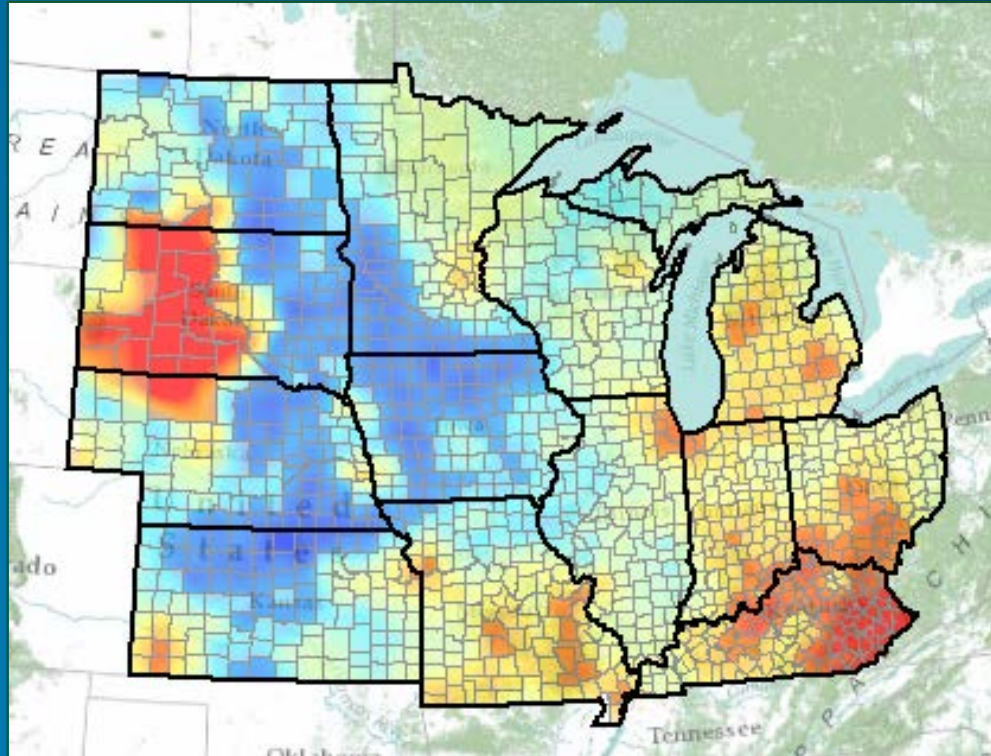
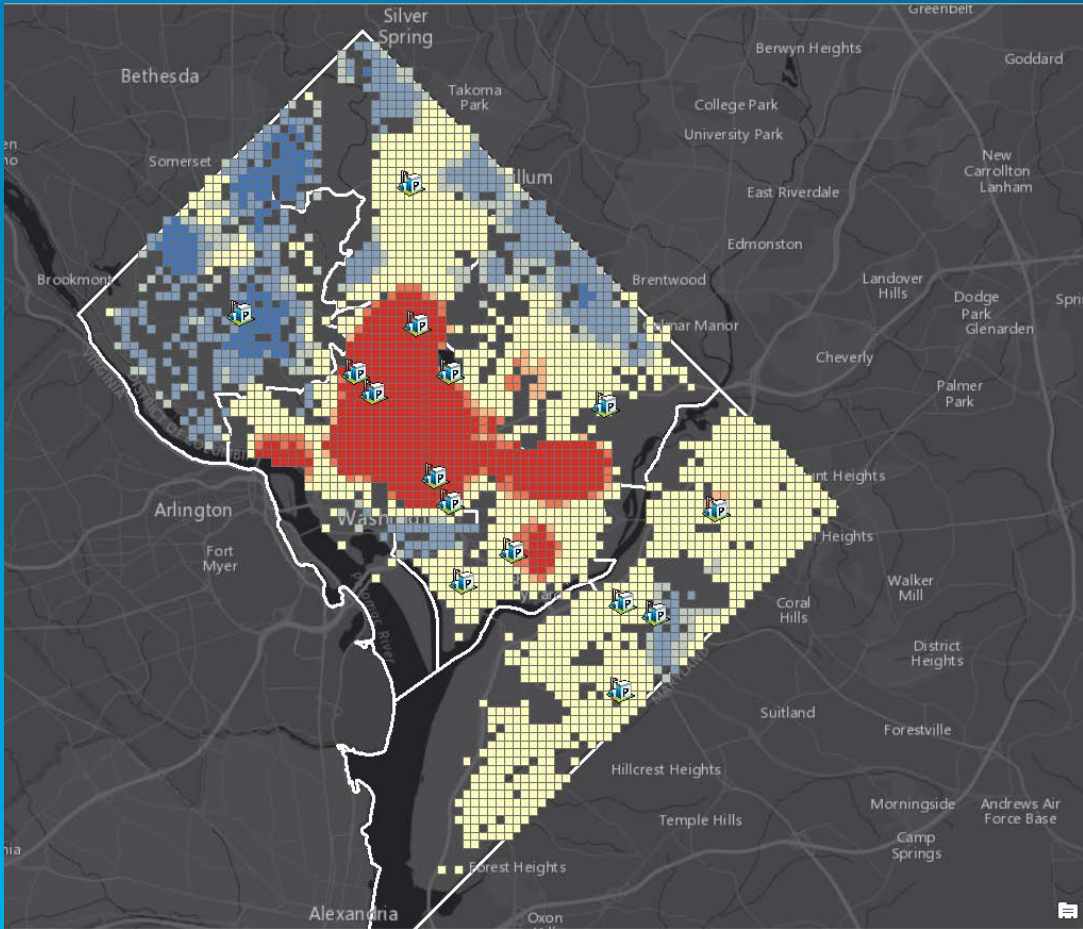
The Spatial
Autocorrelation tool

Spatial
Autocorrelation
Report



Inferential Statistics

Hot spot analysis





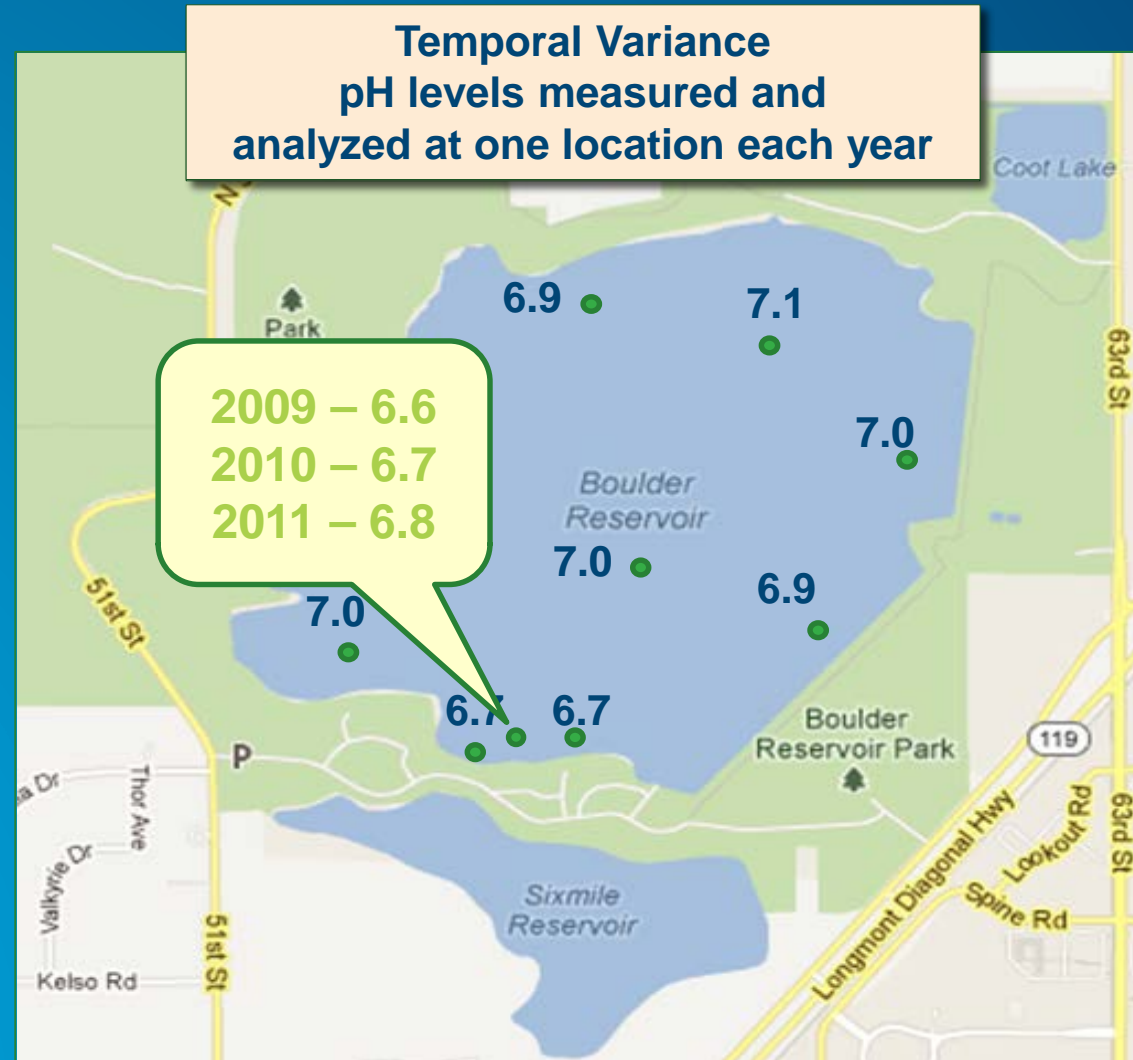
Statistics Demo

Paul Trevillion

Temporal Analysis

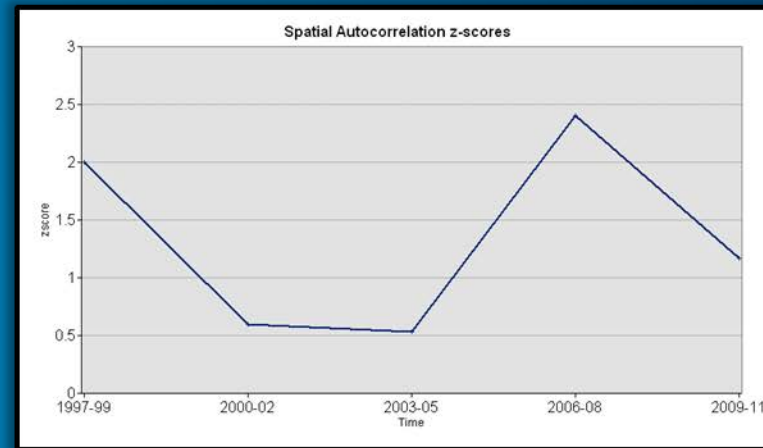
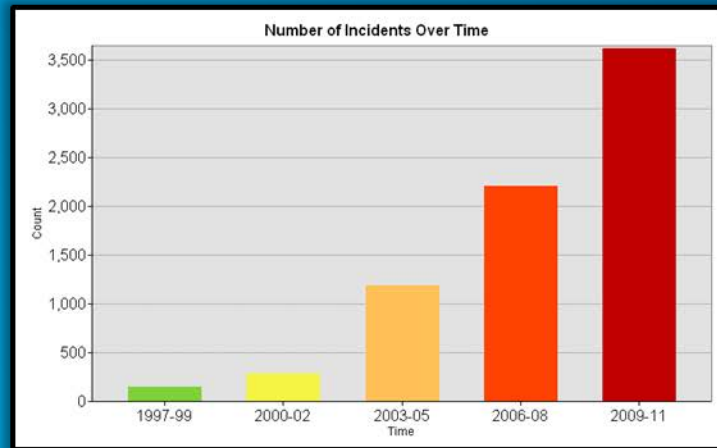
Paul Trevillion

What is temporal analysis?

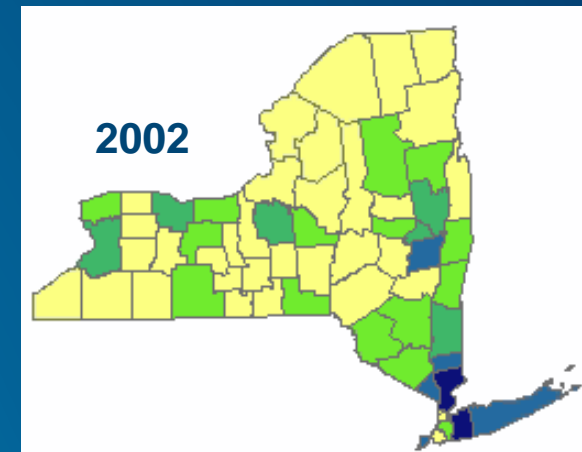
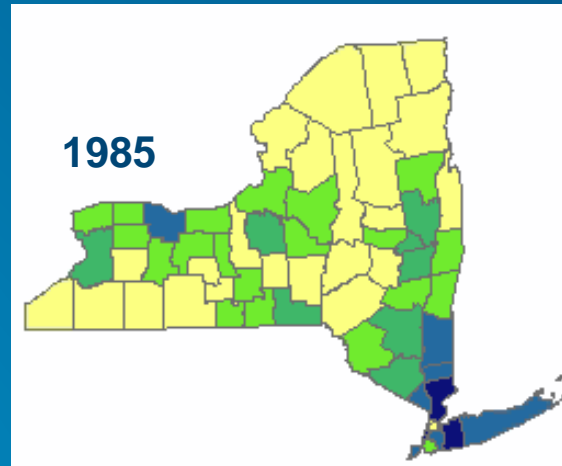
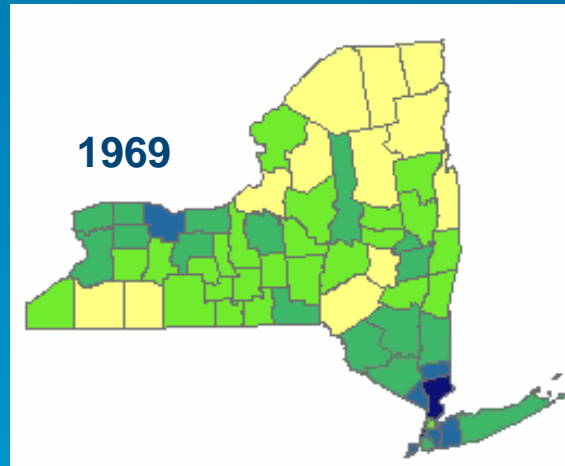


Incorporating time in your analysis

Political violence in Somalia 1997-2011



Temporal patterns and spatial statistics



County Income/National Income Avg

0.647000 - 0.822000

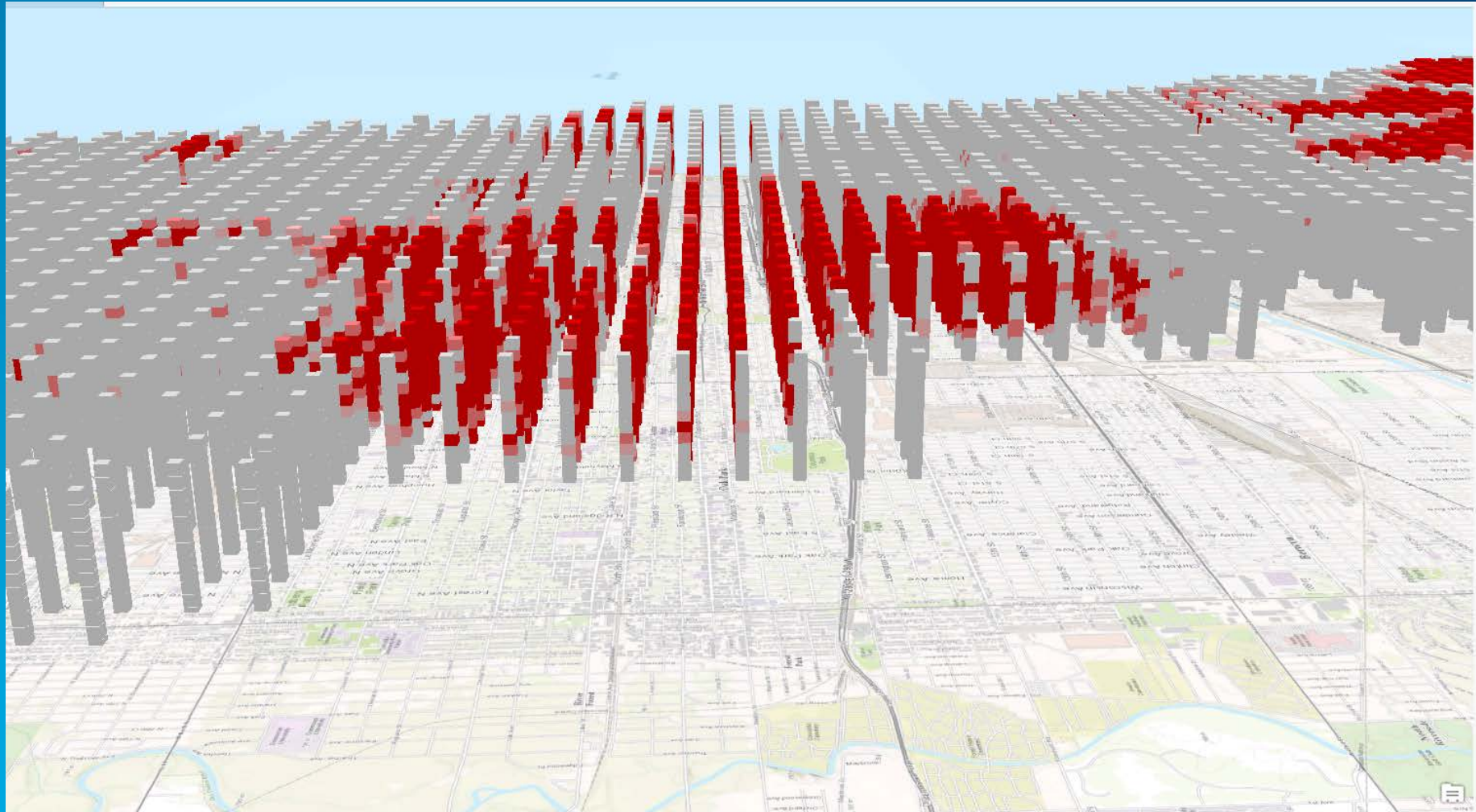
0.822001 - 0.945000

0.945001 - 1.098000

1.098001 - 1.497000

1.497001 - 2.048000

Space-time analysis vs. time snapshots



Temporal Demo

Michael Sarhan



Understanding our world.