Emerging Hot Spot Trends

New Hot Spot – A hot spot that is statistically significant for the final time step and has never been a statistically significant hot spot before. A hot spot that is a newly high value area.

Intensifying Hot Spot – A statistically significant hot spot for 90% of time intervals and has statistically significant increases in point clustering over the entire time frame. Homes here are not only consistently high value, but their relative values continue to increase.

Sporadic Cold Spot – A time series that is an intermittent cold spot. Less than ninety percent of the time-step intervals have been statistically significant cold spots and none of the time-step intervals have been statistically significant hot spots. The values here are significantly low inconsistently.

Workflow
1. Import, clean, and geocode historical transaction data
2. Aggregate points within block group boundaries by a 3-month (quarterly) time interval to derive a mean transaction value for each block group area/quarter period
3. Create and visualize in 3D a space-time cube
4. Generate an emerging hot spot analysis of the space-time cube

Generating the Random Points
1. Take transaction points as inputs
2. Aggregate points within block group boundaries by a 3-month (quarterly) time interval to derive a mean transaction value for each block group area/quarter period
3. Choose a point value ($10,000) and divide each mean transaction value by this point value. The result will be the number of random points to generate.
4. Run custom python script to generate the appropriate amount of random points in the correct block group for the correct time interval.
5. The result is a point layer representing the mean transaction values for each block group by quarter that can be aggregated for the space-time cube tool.

3D Hot Spot Analysis of Home Values (Q1 2014 – Q3 2018)

3D Space-Time Cube - Mean Home Values (Q1 2014 – Q3 2018)