Paint By Number: What's New in Visualization

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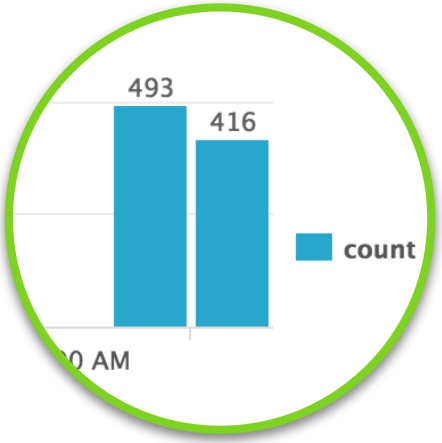
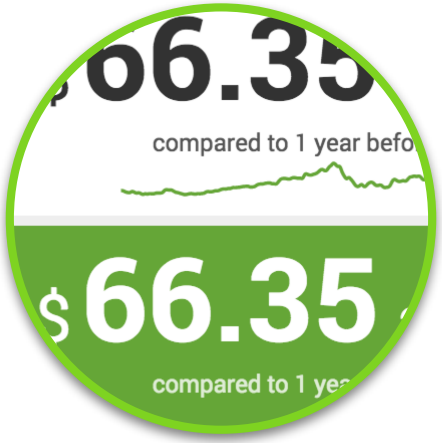
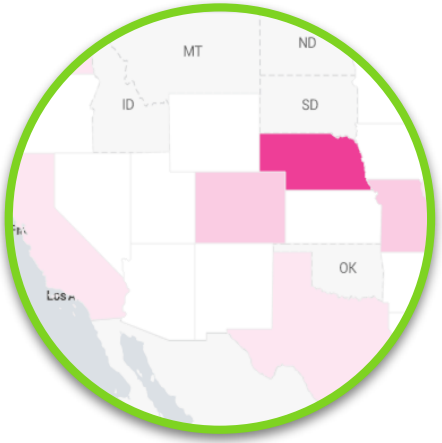
You Asked — We Listened



Improvements
towards
Better Data Analysis



Improved
Dashboard
Visualizations



New Geo
Visualization Type

Visualization Improvements

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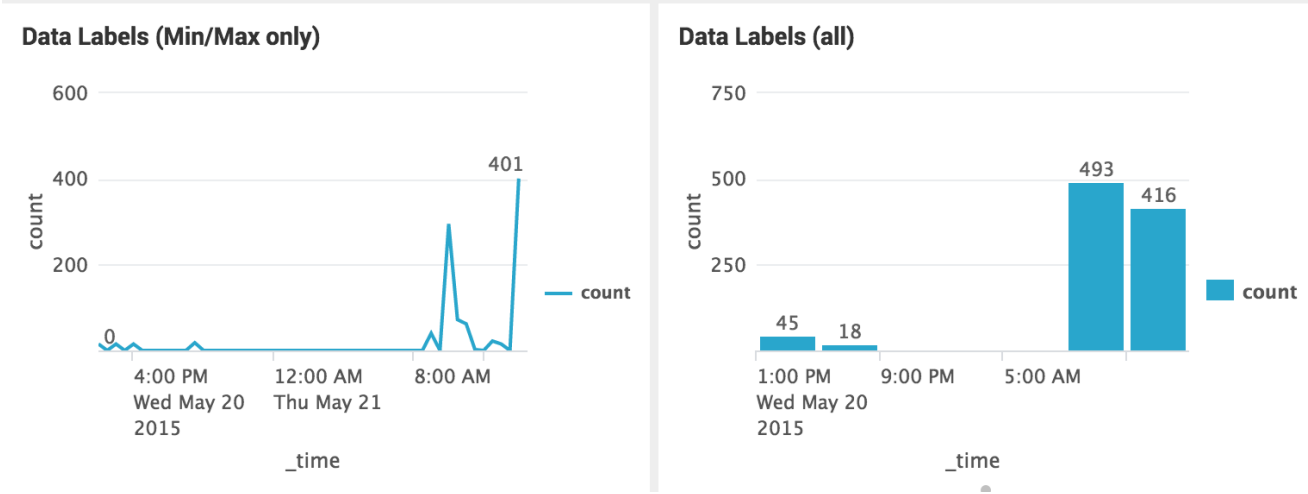
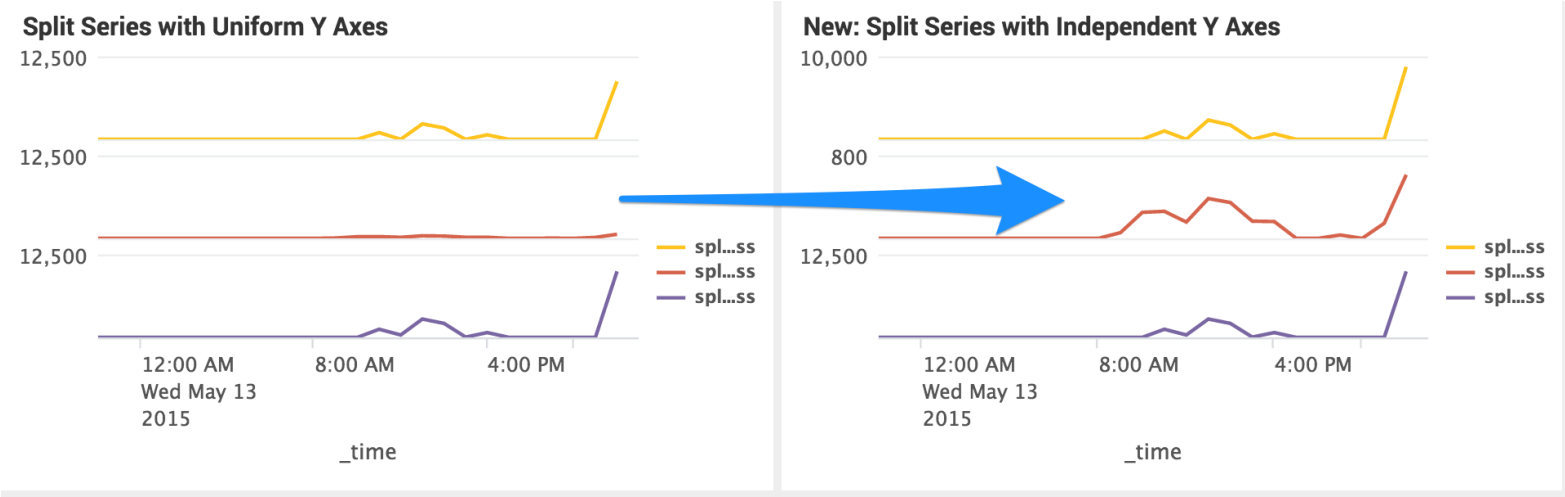
Data Labels

- Labels individual data points
- Min/Max points only, or all points



Independent Axes

- Split Series can now have their independent Y Axes
- Helps compare spikes and trends across series



Single Value Visualization

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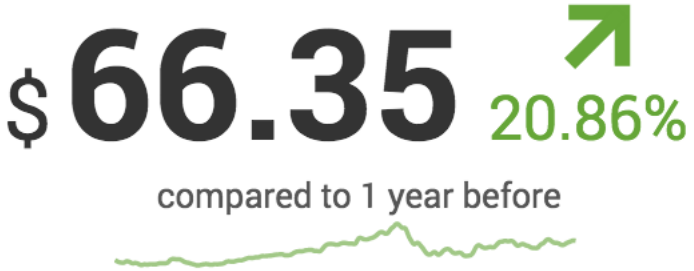
Dashboards are Far Away

Single Value

Completely Redesigned

Existing

New



Single Value

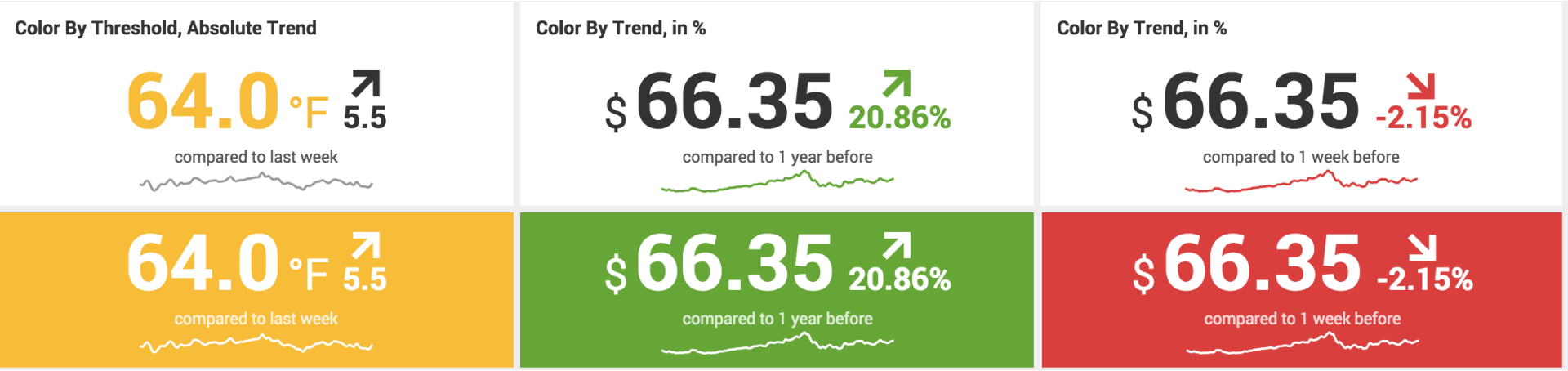
Small Space, High Information Density


```
… | timechart max(value) span=1w
```

No JS coding / CSS styling necessary!

Single Value

Color Modes



Value Range Map,
custom thresholds

Trend up/down,
Can be inversed

Geospatial Analysis And Visualization

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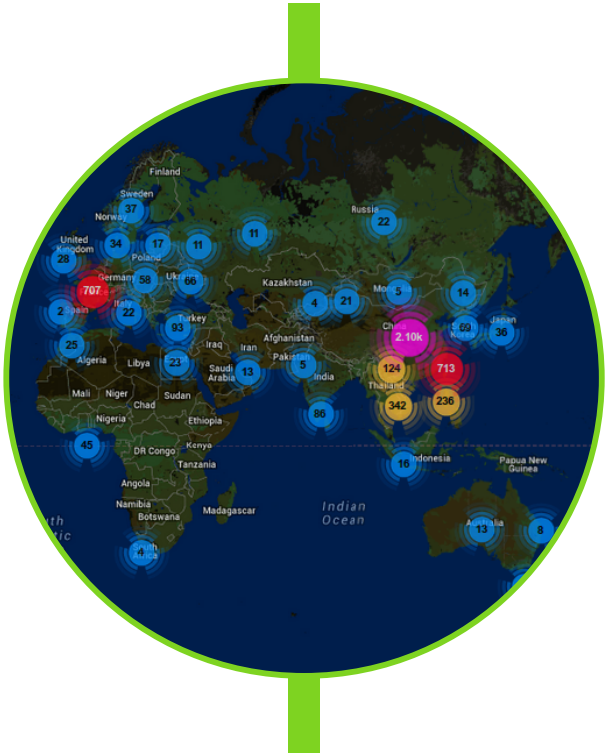
Maps in Splunk

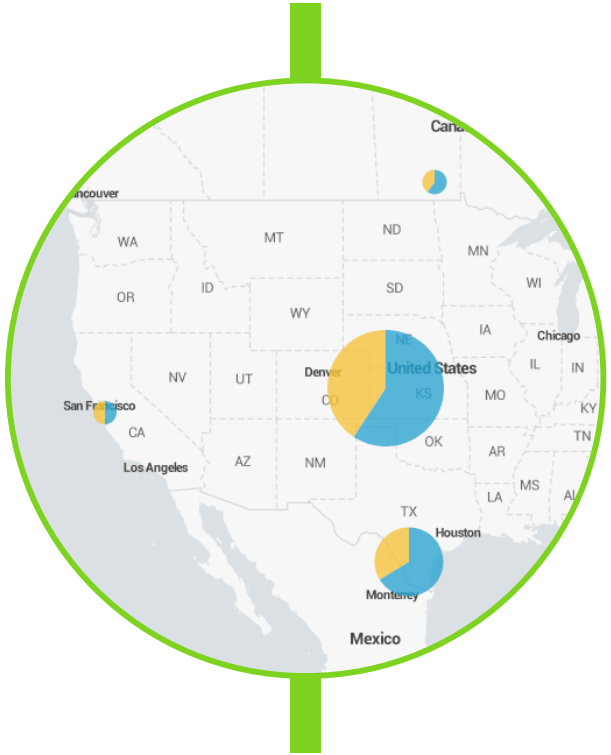


Pre Splunk Enterprise 6.0

Community Supported Apps

E.g. Google Maps add-on

Maps in Splunk



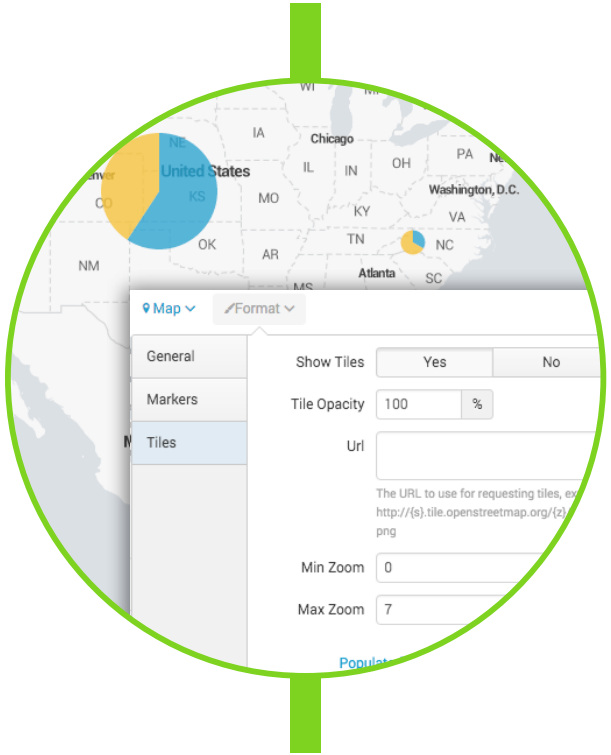
Splunk Enterprise 6.0

Cluster Maps

Splunk Tiles

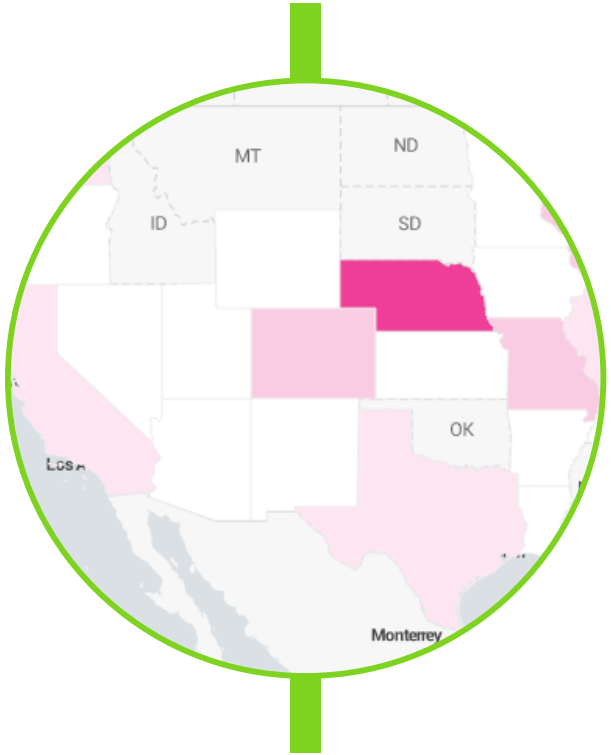
| geostats

Maps in Splunk



Splunk Enterprise 6.1
UI integration
Format Editor

Maps in Splunk

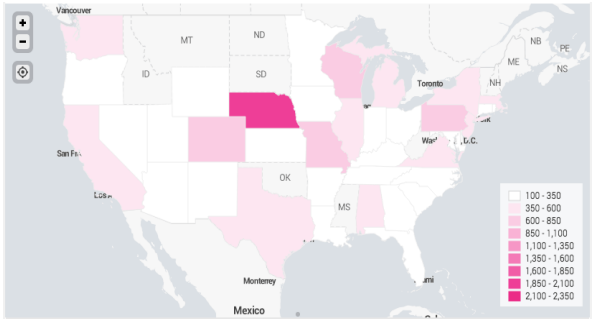


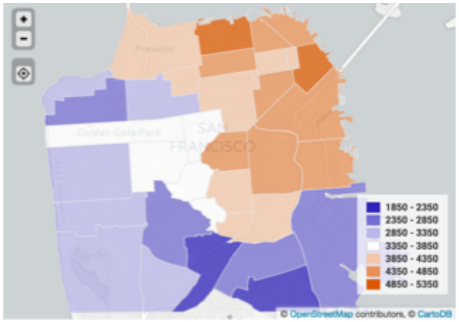
Splunk Enterprise 6.3

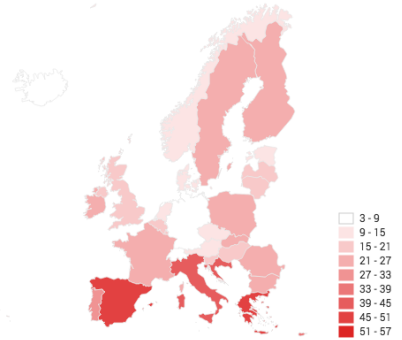
?

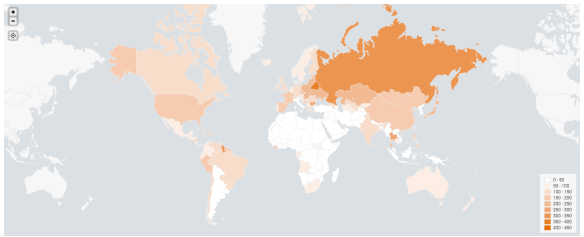
Choropleth Maps

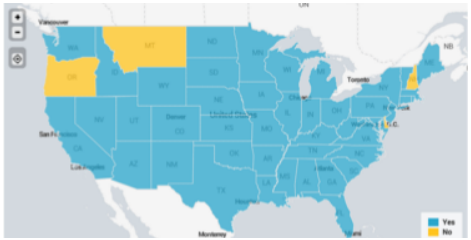
Newest member of the visualization family in 6.3









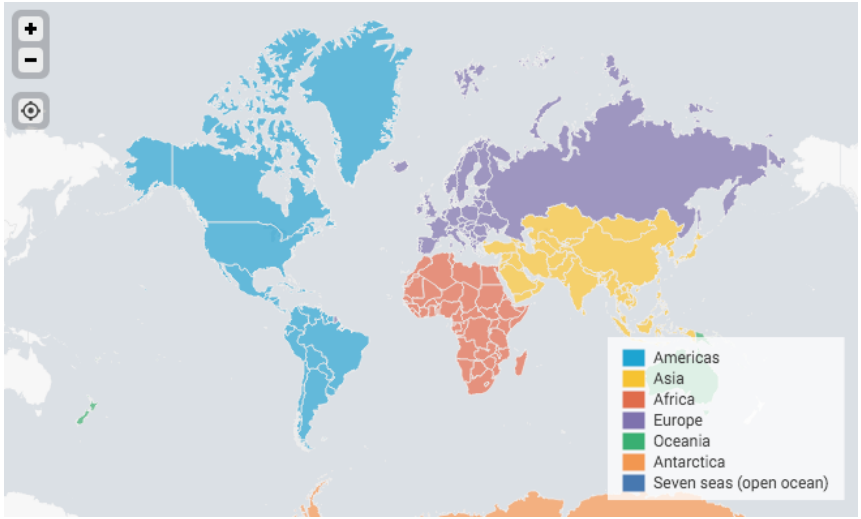


What is a Choropleth?

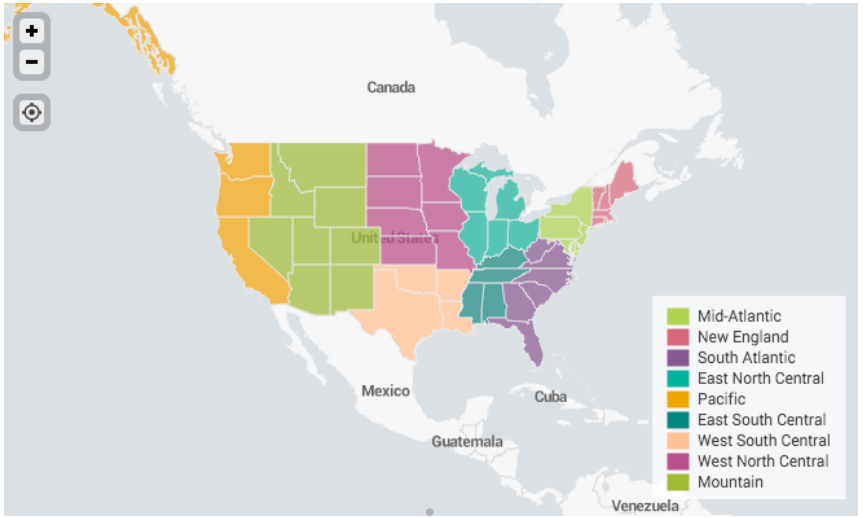
- ***Choropleth*** **-** from Greek: “a multitude of regions”
- A thematic map with areas shaded in proportion to the measurement of a variable
- Visualizes how a measurement varies by geographic region

Built-in, Ready to Use

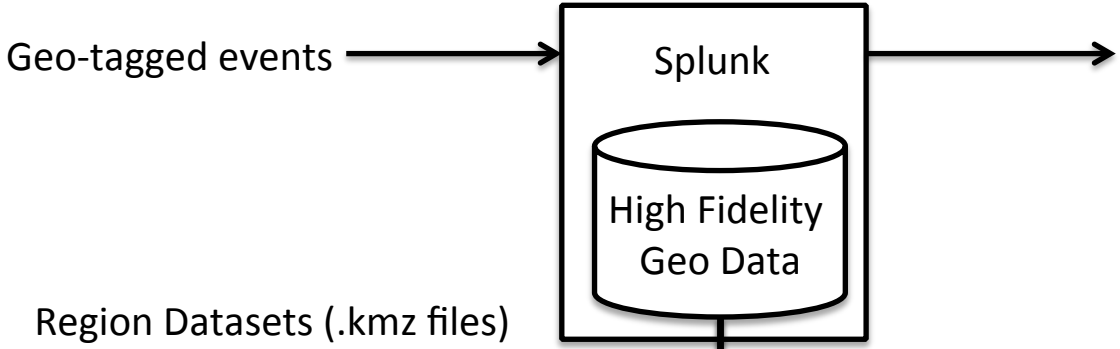
Countries of the world

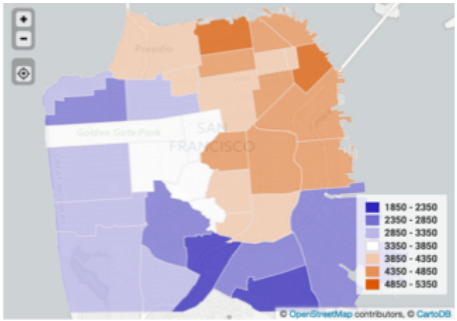


50 States of US + DC



Use Publically Available Region-data





NOAA

Current Severe Weather Zones

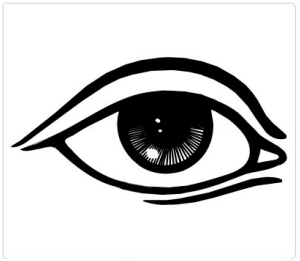
United States™ Census Bureau

State, county, city, congressional boundaries

Neighborhoods, building footprints

Match Events to Complex Shapes in Real-time

- Which polygon contains `37.7792523,-122.4194366`?
- A human eye can easily answer this
- For software the “Point in polygon” problem is harder



- Every event must be checked against every polygon

Relevant SPL Commands

`lookup`	Use the **`lookup`** command to match a polygon to a latitude and longitude coordinate
`stats`	Use **`stats`** commands to create per-polygon aggregates
`geom`	Use **`geom`** command to render polygons on a map

Geospatial Lookup

1. Lookup features (= polygons)

lat	lon	amount
37.7833	**-122.4167**	**46.00**
36.9719	-122.0264	89.25
36.1215	-115.1739	52.50

```
lookup geo_us_states
    latitude as lat
    longitude as lon
```

lat	lon	amount	featureId
37.7833	**-122.4167**	**46.00**	California
37.7814	-122.0264	89.25	California
36.1215	-115.1739	52.50	Nevada

The **name** of the surrounding polygon is attached to your event in the `featureId` field

Geospatial Lookup

2. Aggregate across features

lat	lon	amount	featureId
37.7833	**-122.4167**	**46.00**	California
37.7814	-122.0264	89.25	California
36.1215	-115.1739	52.50	Nevada

```
stats sum(amount)
  as amountTotal
    by featureId
```

featureId	amountTotal
California	135.25
Nevada	52.50

Geospatial Lookup

3. Visualize on a map

featureId	amountTotal
California	135.25
Nevada	52.50

```
geom geo_us_states
```

End-to-End Example

```
…
| lookup geo_us_states
    latitude as lat
    longitude as lon
| stats count by featureId
| geom geo_us_states
```

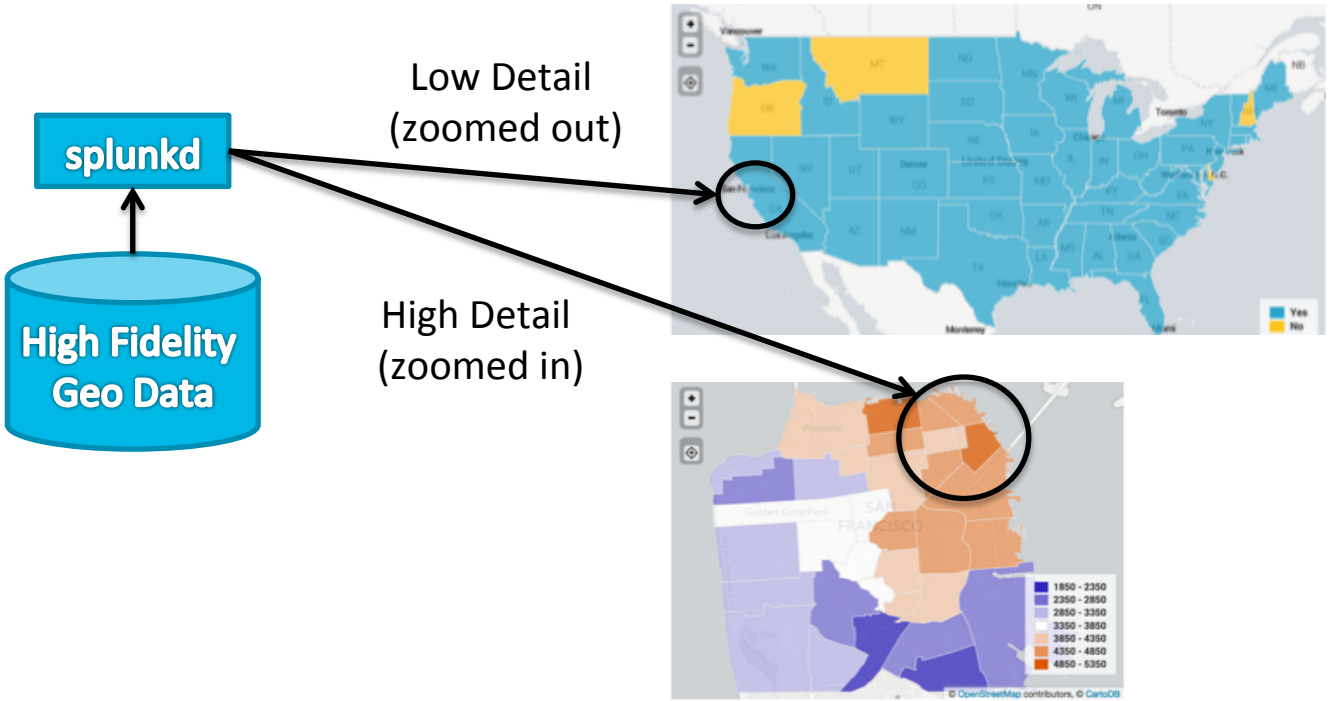
1. Lookup features (= polygons)

2. Aggregate across features

3. Visualize on a map

Rendering Polygons

Always as much detail as needed, never more



Demo

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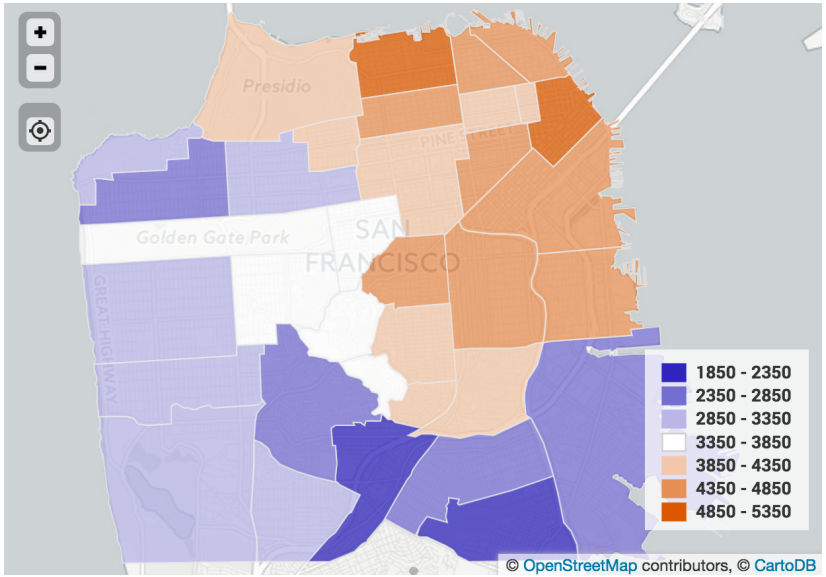
Review: Creating a Geospatial Lookup Index

- Pick a KMZ (zipped KML) containing polygons
- Optional: Use Google Earth to view/verify the boundaries
- Setup lookup via UI / in the cloud
  - Upload .kmz file via lookup UI
  - Setup lookup definition with lookup type “Geospatial”
- Setup lookup manually
  - Move .kmz to `lookup` directory
  - Set `external_type=geo` in `transforms.conf`
- Splunk creates an efficient geo-index replicated across indexers

Choropleth Maps

Use Cases



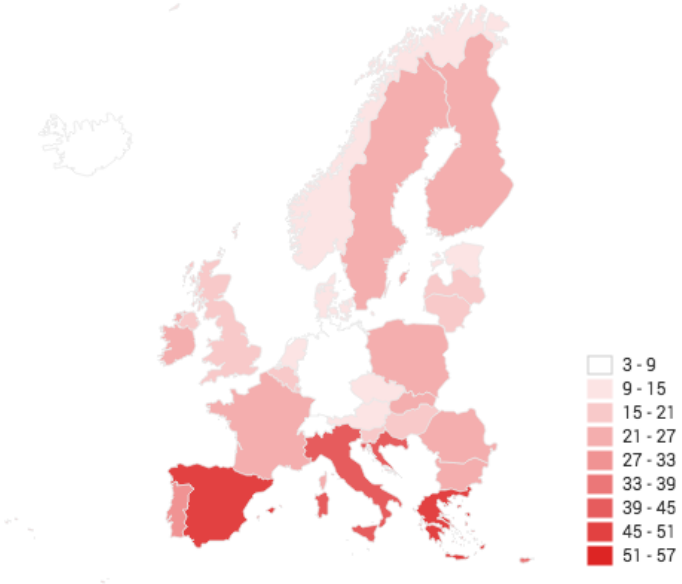
Supports any KMZ file with Polygons

Examples:

- Sales Regions
- Campus Maps
- Districts
- ZIP codes
- Census Tracts
- Geofencing areas

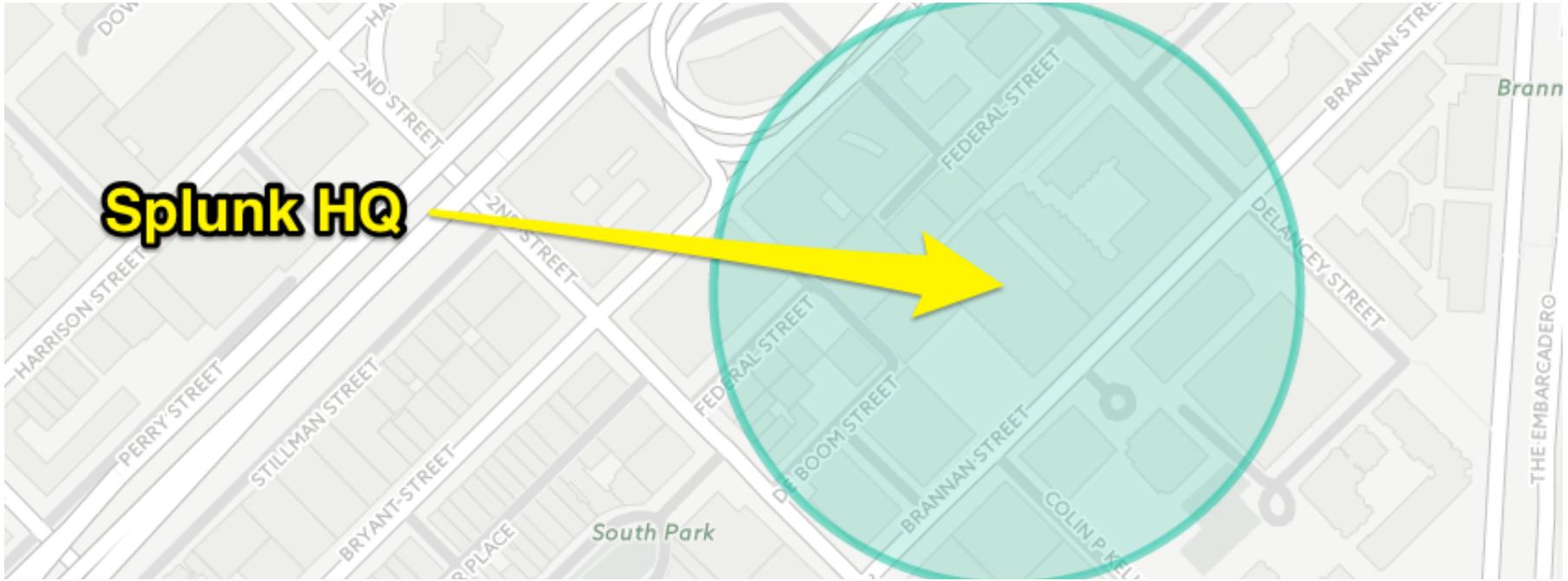
Use Cases

Geospatial Analytics



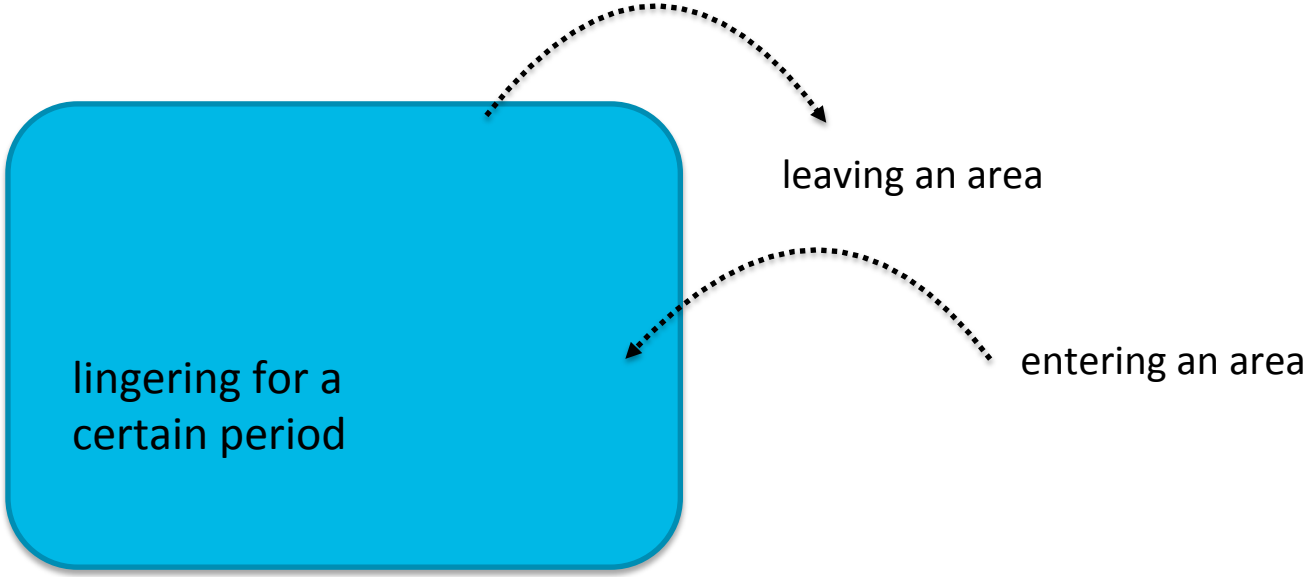
Use Cases

Geofencing



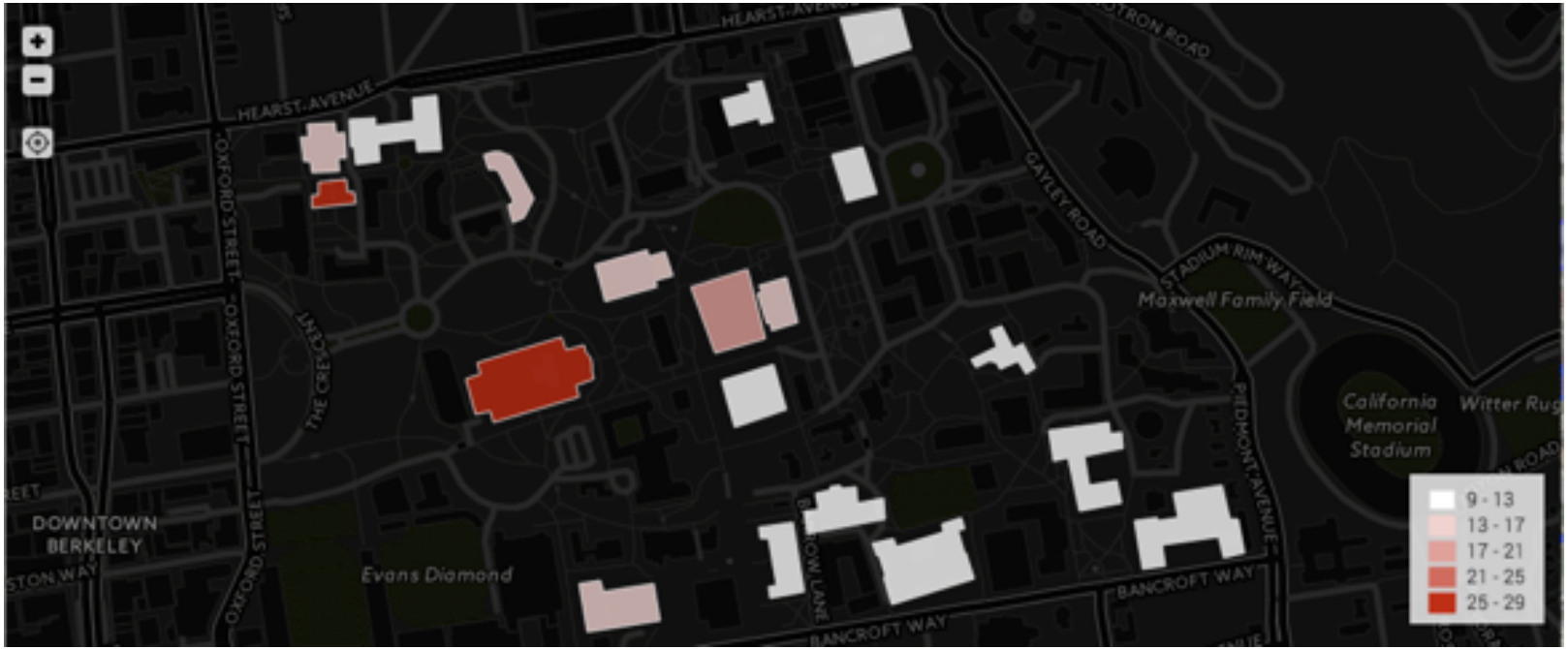
Use Cases

Geofencing



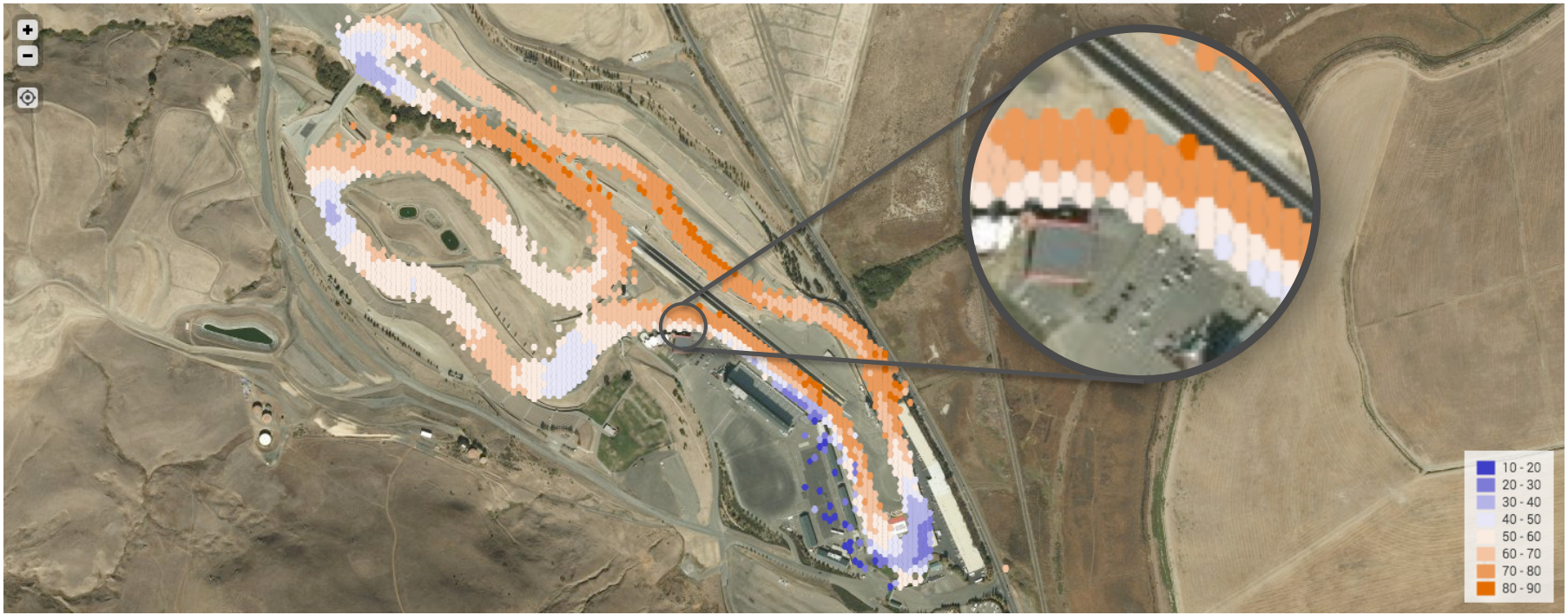
Use Cases

Campus Map: E.g. Show badge access



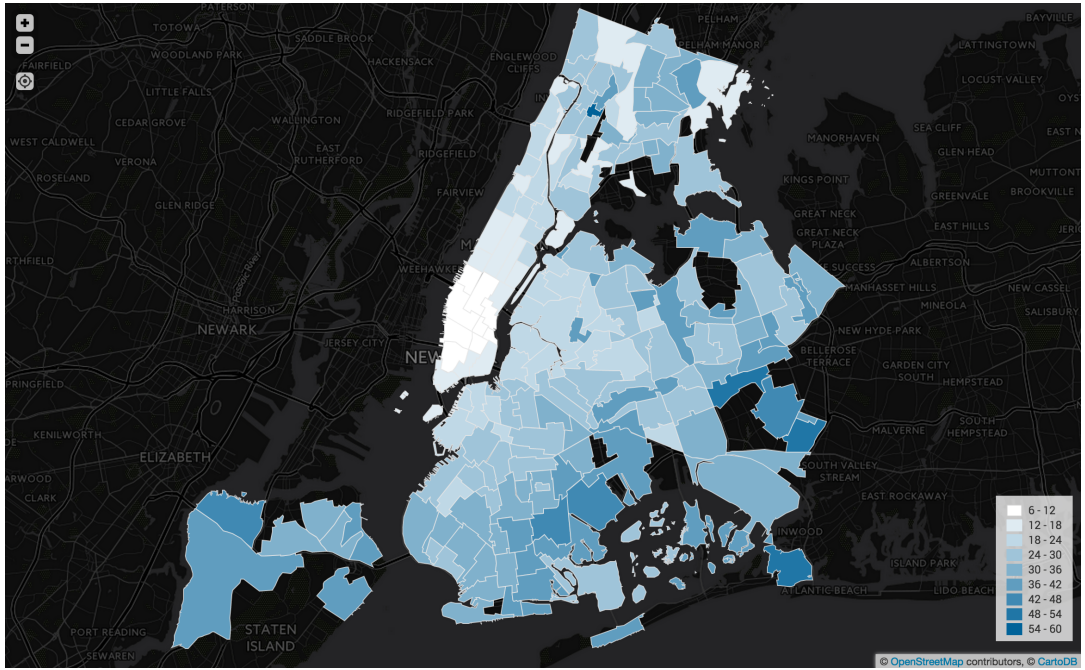
Use Cases

Hexagonal grid: Fine grained heat map



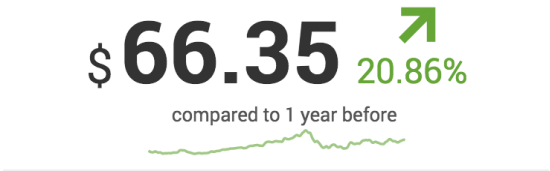
Examples Custom Polygons

New York neighborhoods: average taxi ride duration



Summary

Single Value redesigned for Dashboards

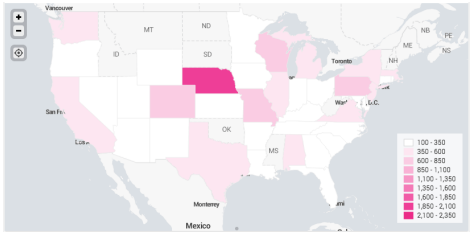


Geospatial Lookup based on custom boundaries

`36.104643, -115.165080`

Las Vegas?
MGM Convention Center?
United States?

High fidelity Choropleth maps based on custom shapes



THANK YOU

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