

Learning module: Introduction to Qlik GeoAnalytics

Exercise - INSTRUCTIONS

Using the **Example Download** instructions on the right, open the *IntroQlikGeoAnalytics_Exercise* example in Qlik Sense Desktop and review each sheet to practice your understanding of the different map layers as well as the primary features of Qlik GeoAnalytics.

Sheet: Burglaries in Europe:

This map presents an area layer and a bubble layer. The area layer represents countries in Europe colored by their unemployment rate on a diverging gradient scale. The bubble layer represents several measures: the number of domestic burglaries for a city is colored based on a sequential gradient and the population of a city is represented by the size of the bubbles. The bubbles are positioned at the centroid or center-most point of a city. As you review this map, consider the following questions:

- **Which country has the greatest correlation between burglaries and unemployment?** (Answer: Belgium, the color of the country is a deep red and the colors of the bubbles range from orange to dark brown per the color scales of each legend.)
- **How does the point layer overlaid atop of the area layer readily offer new information to the map?** (Answer: It immediately connects non-geographic data to the real world, bringing faster insight and understanding when location is a variable of analysis.)
- **What advantage does the multi-layer approach to mapping provide over a single-layer map?** (Answer: Spatial analysis is more efficient and accurate, revealing more associations and even non-associations, thus improving location-related decision-making.)
- Clear all selections (if you selected data) and continue to the next sheet.

Example Download

The example file supporting this exercise is available in the 'Example files' section of this learning module. Access the zip archive, which contains all of the example files for this module, and extract its contents.

The **IntroQlikGeoAnalytics_Exercise.qvf** file can be opened in one of two ways:

Option 1:

Move the file to your Qlik Sense Desktop hub directory at ...
C:\Users\<user>\Documents\Qlik Sense\Apps
... which will cause it to become a permanent part of your hub

Hub directory

Option 2:

Drag & drop the file onto your hub (*note*: this approach will open, but will not add the file to your hub)



Sheet: Employment by Zip Code:

The map of the USA has been configured as a drill-down map that separates three layers into distinct views of the data. The three layers from top to bottom are: US states (an area layer), counties within each state (an area layer) and zip codes within each county (a bubble layer where the bubble represents the centroid or center-most point of a zip code area). As you review this map, consider the following questions:

- **How is the drill down, multi-layered approach to geospatial analysis different than a single visualization with multiple layers?** (Answer: When there are multiple layers of data and datasets are very large, a drill-down map provides an interactive, productive mechanism for location analysis.)
- Hover your mouse over the state of California.
 - **How many people are employed in California?** (Answer: 12 million)
- Select the state of California.
 - **Which county has the largest number of people employed?** (Answer: Los Angeles with 3.37 million people)
- Drill into Los Angeles by selecting that county.
 - **Which zip code has the largest number of people employed?** (Answer: 90245 with 74,948 people)
- Clear all selections and continue to the next sheet.

Sheet: Houses Sold in Sweden:

This map has been configured with an area layer and a chart layer. The area layer represents home price fluctuations in Swedish counties and the chart layer provides bar chart depictions of home prices over several years. Each chart is positioned based on the centroid or center-most point of each county. This map also includes the animator control which animates the area layer that depicts home price changes over each year in the data model. As you review this map, consider the following questions:

- **How does the use of chart representations in lieu of bubble representations enhance location analysis?** (Answer: Bubble layers can communicate a single dimension while chart layers can communicate across two dimensions, thus allowing more information to be presented for a point location on a single visualization.)
- **Utilizing the animator, which county showed high home price changes from year to year?** (Answer: The county of Västra Götaland consistently, from year to year, illustrated a deep red color, suggesting the largest fluctuations in home prices over the years.)
- **How does the animator help to identify patterns or trends in the data?** (Answer: The animator visualizes changes over a dimension in a single visualization based on a continuous scale that provides a complete and accurate view of the data.)
- Clear all selections and continue to the next sheet.

Sheet: 1854 London Cholera Outbreak:

The London Cholera Outbreak was a severe epidemic that occurred in 1854 in the Soho district of London, England. It killed 616 people due to contamination of water from a pump located on Broadwick Street (Pump #1 on the map). This map illustrates the number of deaths with a heat map layer. The number of deaths are the largest based on the intensity of the heatmap colors where lower intensities are black and transition through red on their way to the higher intensities which are colored white. There is also a bubble layer on this map which supplements the heatmap layer with locations of water pumps. As you review this map, consider the following questions:

- **What is the relationship of the most intense area of the map with the water pump located near the center of the heatmap?** (Answer: The most intense area, or the red area transitioning to a white area of the heatmap, is located towards its center. Since Pump 1 is near the center of the heatmap, it is the pump that is most positively correlated with the heatmap. In other words, Pump 1 likely contributed to the greatest number of deaths to cholera.)
- **What is the difference between analyzing discrete verses continuous spatial data?** (Answer: Maps can either display discrete or continuous data. Discrete data is conveyed as specific values and can be visually counted while continuous data may be any value within a certain range and is visually measured. This is the effective difference between bubble and heatmap layers.)
- Clear all selections (if you selected data) and continue to the next sheet.

Sheet: US Flight Delays:

This map represents over 25,000 lines drawn between airports. Each line illustrates flight delays based on a color scale where blue represents shorter time delays and red represents longer time delays. There is also a secondary measure that controls the widths of the lines based on the number of flights between two airports. Using the filter pane to select origin airport codes one at a time, compare flights from two large hub airports, such as LAX in Los Angeles and JFK in New York. As you analyze the results, consider the following questions:

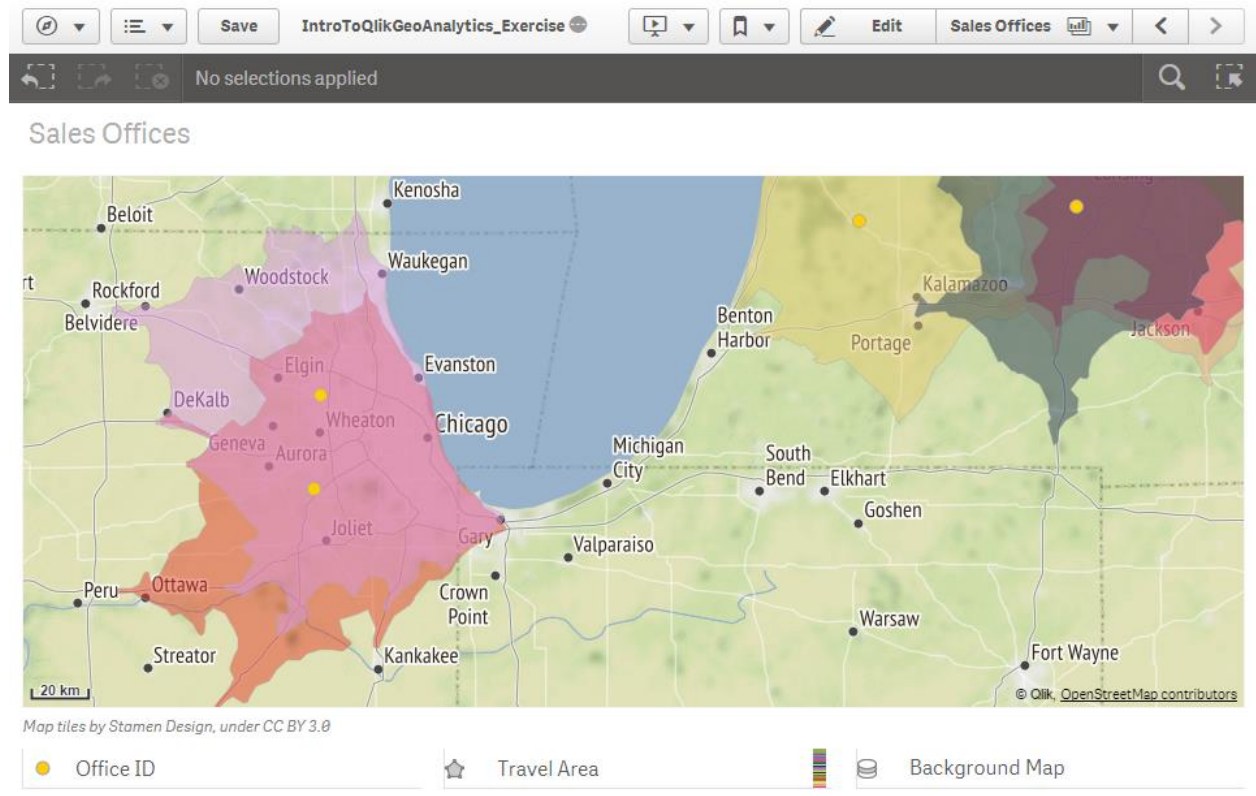
- **Which airport appears to prepare flights for more timely arrivals?** (Answer: LAX has more timely flights due to the lower number of red lines between airports and the maximum average delay is only 126 minutes versus JFK who shows a maximum delay of 302 minutes.)
- **How does the filter pane component improve geospatial analysis for this map?** (Answer: When datasets are large and maps appear too cluttered for efficient analysis, supplementing the visualization with Qlik Sense charts, such as the filter pane, provides alternative views of the data, whereby data can be filtered for easier analysis.)
- Clear all selections and continue to the next sheet.

Sheet: Sales Offices:

This map demonstrates the results of the TravelArea geospatial operation. The travel areas are based on 1-hour drive times from an office location as depicted by the yellow points on a bubble layer. A geodata layer, provided by Stamen Design, has also been added to this map. Click the legend of the geodata layer to disable the Visible setting to better appreciate the value this TMS geodata layer brings to location analysis. As you review this map, consider the following questions:

- **Which Office IDs appear to have the smallest travel areas?** (Answer: Office ID 1 in Massachusetts [it is on an island]; Office ID 7 in Maryland [probably due to the Chesapeake Bay to the east]; and Office ID 27 in the Appalachian Mountains [probably due to the mountain roads and lack of interstate highways].)
- **How does the TravelArea operation or any of the other geospatial operations advance location intelligence?** (Answer: Qlik GeoAnalytics' operations go beyond simple map visualizations to high-performing, complex geospatial calculations that provide greater insights across a broad range of location-related use cases.)
- **How does the addition of the geodata layer help us better understand each location and travel area?** (Answer: With any location analysis, the opportunity to analyze detailed aspects of an area improves decision-making. The geodata layer utilized in this example provides terrain details at smaller scales. If you zoom in on the map to a larger scale (2 km), more street-level data is present compared to the default base map. The addition of terrain and street data offers more location information about the travel areas.)

- Zoom the map into the city of Chicago, IL. Notice that there are two Office ID bubbles (3 and 14) but three different travel areas.
 - **What does the darker, larger area represent?** (Answer: The orange area represents the travel area for Office 3 and the light pink area represents the travel area for Office 14. The darker pink colored area represents the intersection of the two areas.)



Continue your exploration of the *IntroQlikGeoAnalytics_Exercise* app until you become comfortable with the different map layers, drill-down capabilities, the animator control and as well as the potential of geospatial operations.