## Visual Analytics: Introduction to Tableau

**Download Tableau Public**
- Go to: https://www.tableau.com/products/public/download
- Click "Download Tableau Public"
- Fill in the details to sign up for a Tableau account
- Click "Download Tableau Public" again, and a .exe file will be available for download
- After downloading the .exe file, double click on it to run the installation

Tableau Public Gallery: https://public.tableau.com/en-us/s/gallery
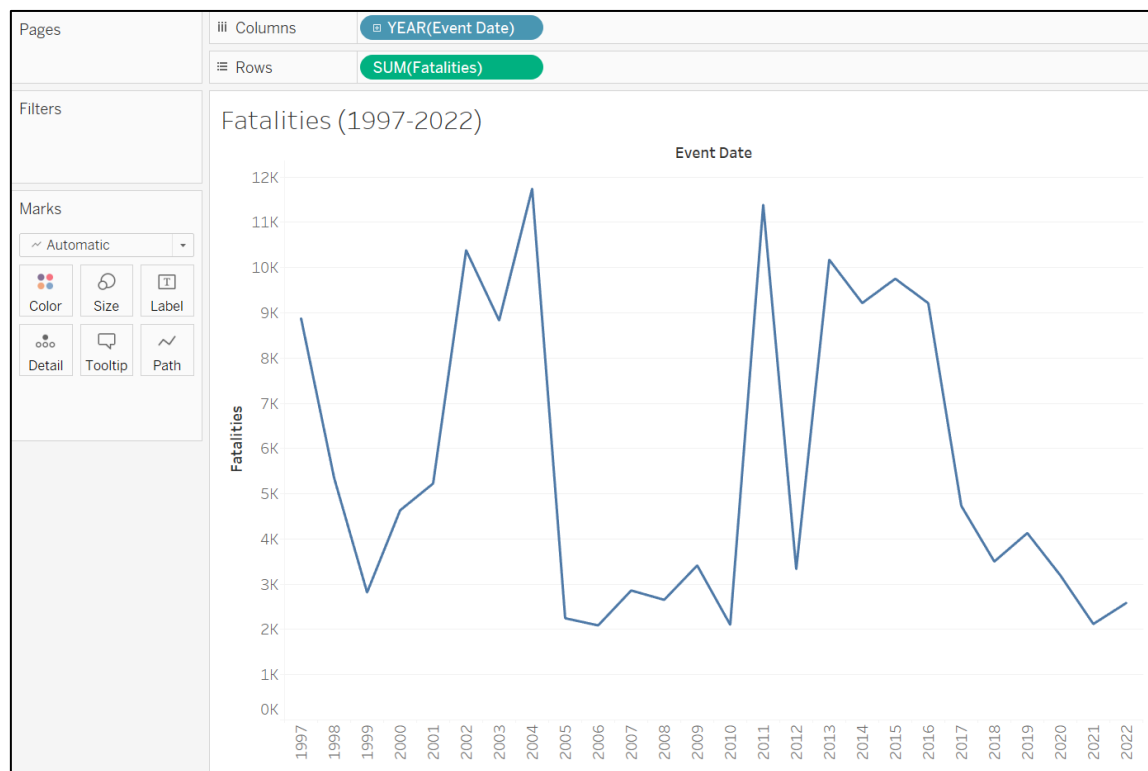
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**Open the program Tableau Public**

**Connect to your data**

- Rename data file: "Northern Africa Conflict"
- Manage metadata
- Look through the data columns – sort, change formats (e.g. date/time), etc.
- Filters
- Combine with another dataset
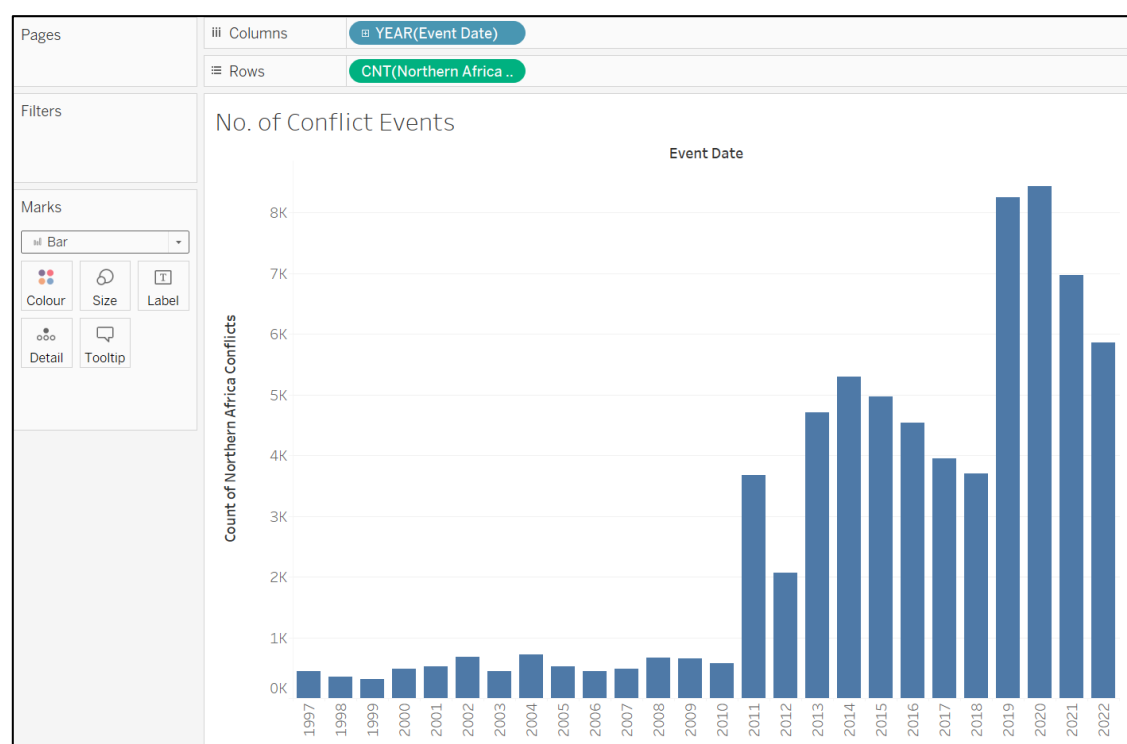
**Go to Worksheet to start creating graphics**

Created by Michelle Quak (michelle.quak@nus.edu.sg)

## 1. Fatalities (1997-2022)

    a. Columns: YEAR(*Event Date*)

    b. Rows: SUM(*Fatalities*)



## 2. No. of Conflict Events

    a. Columns: YEAR(*Event Date*)

    b. Rows: CNT(*Northern_Africa...*)

    c. Marks: Bar



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### 3. Fatalities per Event
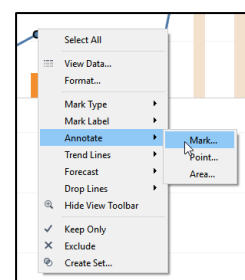   a. Columns: YEAR(*Event Date*)
   b. Rows: CNT(*Northern_Africa…*), SUM(*Fatalities*)
   c. Show Me: Dual Combination
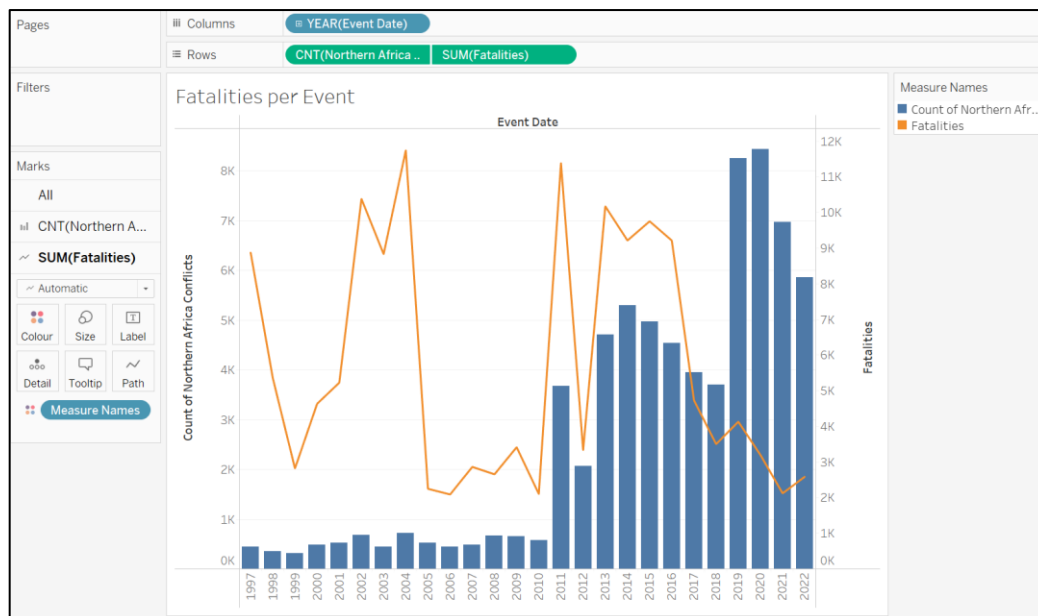


   d. Add in Annotations:
      At the marked year, right click > Annotate > Mark…
      - 2003: "War in Darfur, 2003 - present" (Sudan);
        **probably does not include deaths by famine.
      - 2011: "Libyan Crisis, 2011-present"



## Normalise Number of Fatalities per Event
   e. Analysis > Create Calculated Field >
      Rename Calculation1 as *Fatalities per Event*
      Equation: SUM(*Fatalities*)/CNT(*Northern_Africa*…) --- drag and drop from the Rows box into the Calculation box.
   f. Drag and drop *Fatalities per Event* from Measures box into Rows
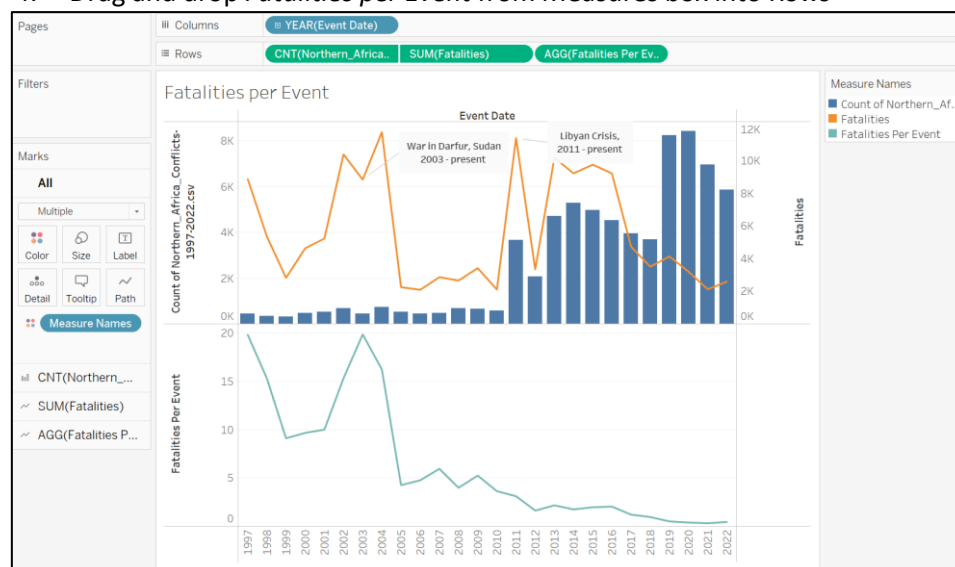


   g. To change colour for any of the visuals, you can click on the individual legend records.

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*Duplicate the sheet tab for the next section.*

4. **Country Comparisons**
   a. <u>To visualise by Country</u>, drag and drop Country to Marks box at
      - CNT(*Northern_Africa…*)
      - AGG(*Fatalities per Event*)
   b. Delete SUM(*Fatalities*) from the top pane

   c. Add F*atalities per Event* into Rows (to duplicate the records, <u>creating an average line for fatalities per event</u>)
   d. Right click on the just added *Facilities per Event* > Dual Axis
   e. Remove the *Country* dimension from the Colour Marks box
   f. Right click on right axis > Synchronise Axis
   g. Change colour on Marks box to highlight the average *Fatalities per Event*

   h. Right click CNT(*Northern_Africa…*) tab > Add Table Calculation
      - Calculation Type: <u>Percent of Total</u>
      - Table (down)
   i. Label conflicts
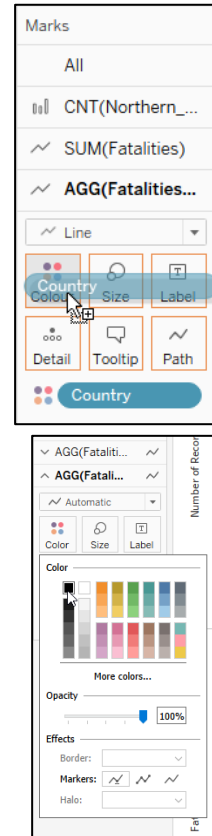
(To change number of decimal places:
Right click on the measure > Default Properties > Number format… > Number (Custom),
Decimal Place)


Country Comparisons

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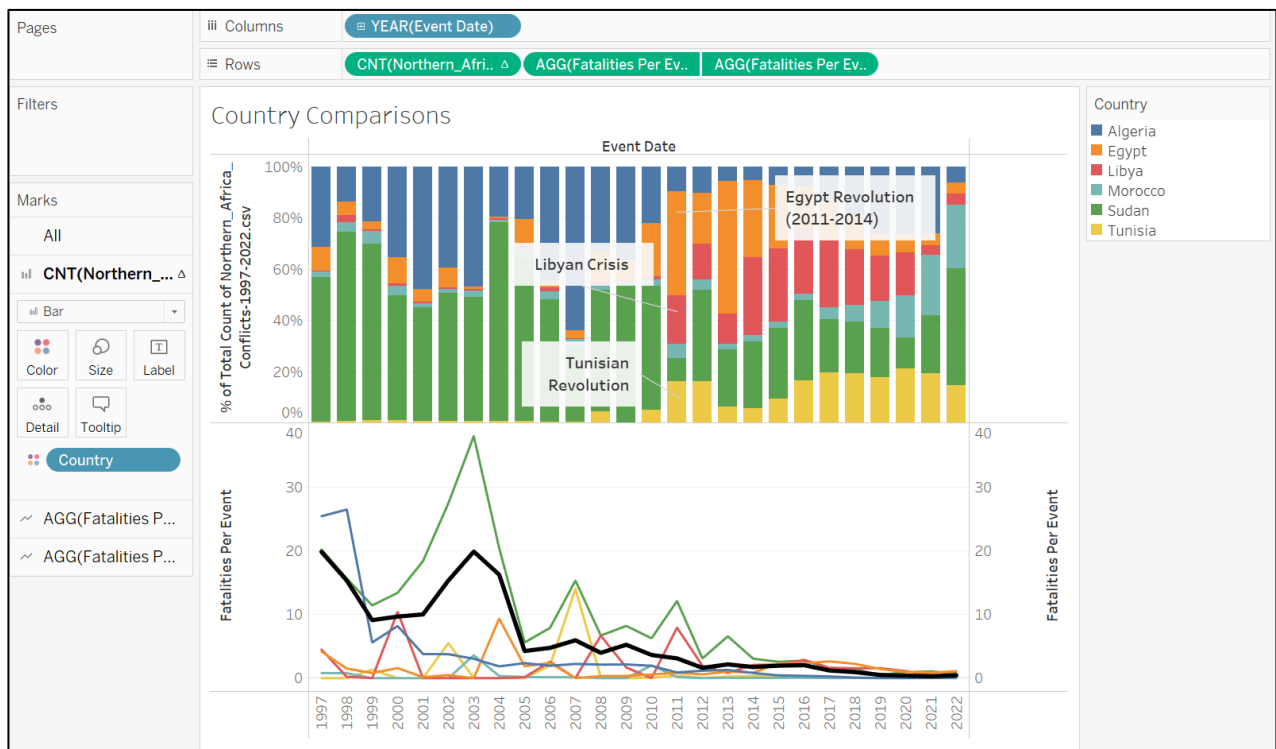
5. **Density Map of Conflict events**
   (Press F, click and move mouse to pan across map)
   a. Columns: *Longitude*
   b. Rows: *Latitude*
   c. Marks box
      - Detail: *Event ID Cnty*;
      - Type: Density
   d. To change the visualization, click on Color > Intensity 80%, Opacity 80%)

   e. Change YEAR(*Year*) filter type to Single Value (slider) – <u>Change *Year* to Discrete</u>
      (Look at changes in the concentration of conflicts year-on-year)

** (Alternatively, drag drop "YEAR(*Event Date*) to Pages box" for automatic replay)
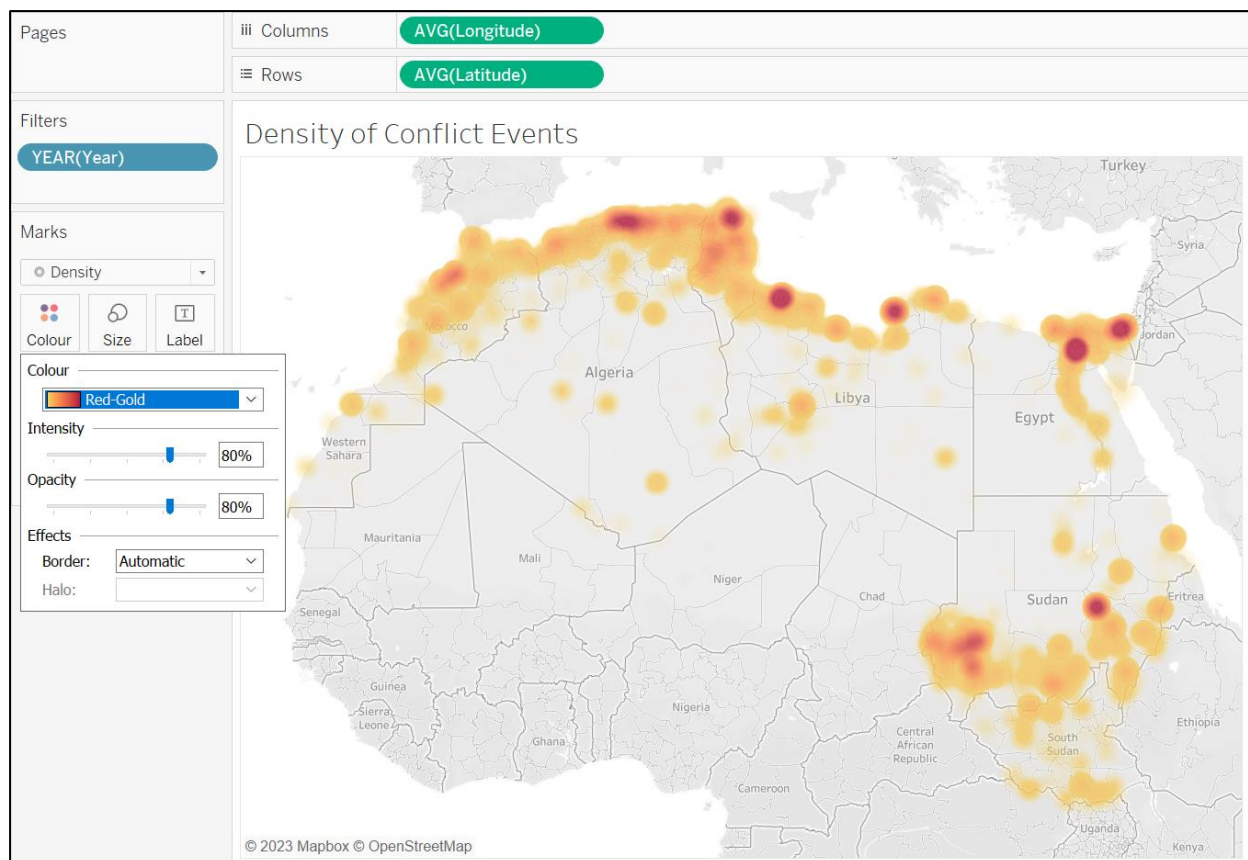


   f. Use the Radial Selection to select data points at the 'hotspot' near Cairo, Year 2015
   g. Select View Data > Full Data



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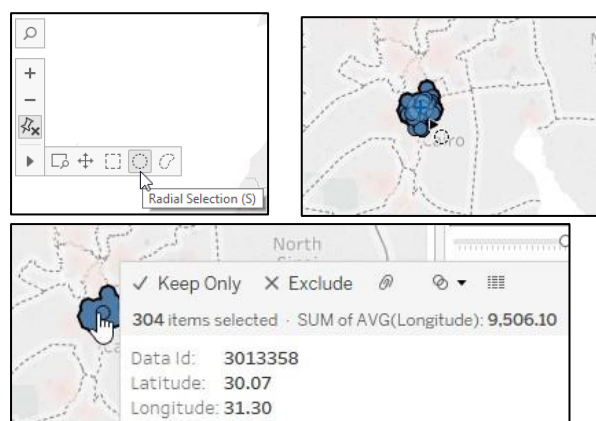
*Duplicate the sheet tab for the next section.*

6. **Proportional Symbol Map of Fatalities per Event**
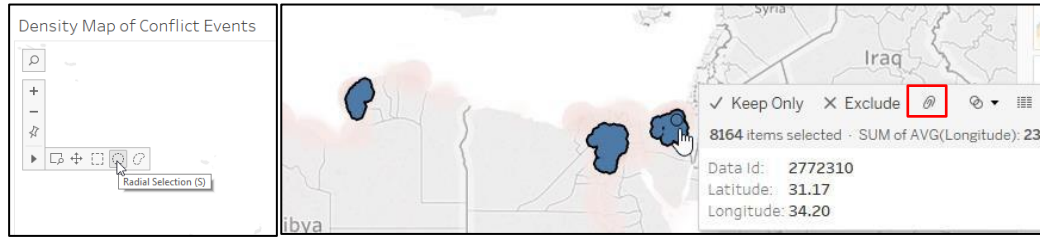   Marks Type: Automatic
   a. Size: *Fatalities per Event*
      - Click on Size tab, change to the second notch
   b. Color: *Fatalities per Event*
      - Click on Color tab, Edit Colors, change palette to Orange-Blue Diverging
      - Opacity 80%
      - Select Reversed; Use Full Colour Range
      - Click 'Advanced' , change Center to 100
   c. On the Marks box, right click *Data ID* field and Sort
      - Sort By: Field; *Fatalities per Event*
      - (Sorts the data points so that the larger magnitudes appear on top).

   d. To change the type of base map, select Map > Background Map > Satellite
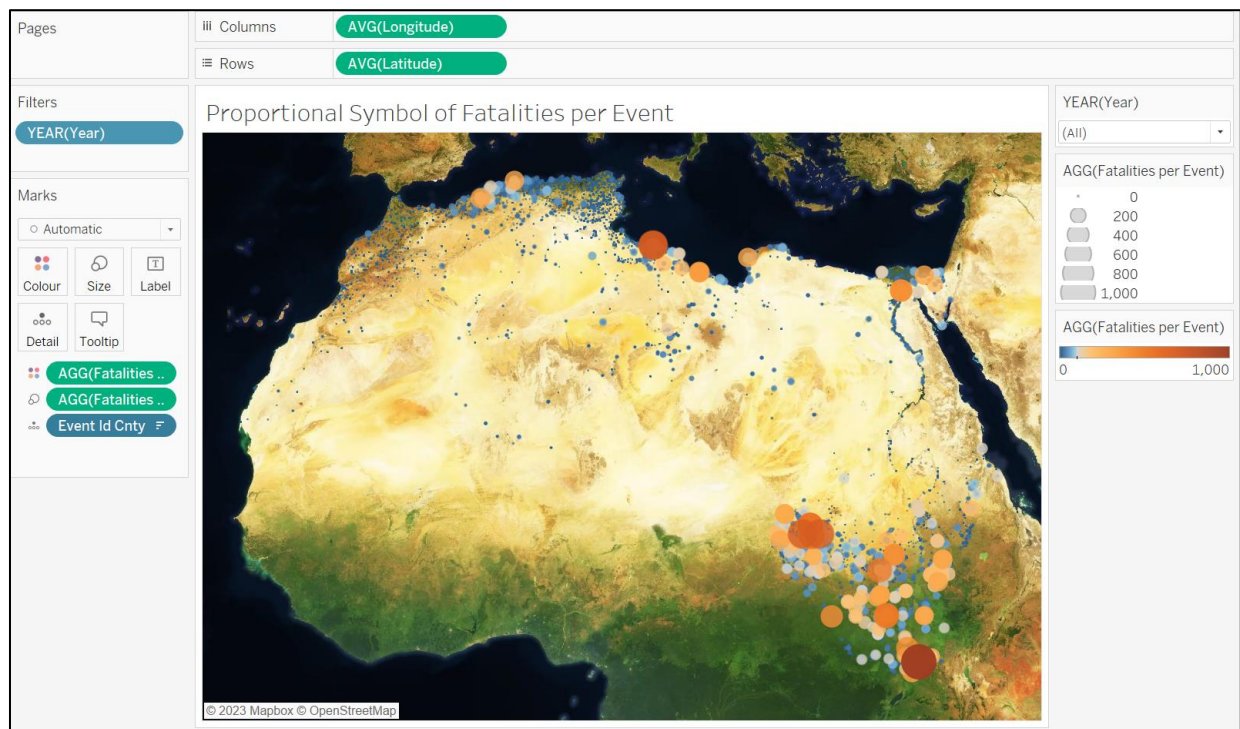


7. **Creating Groups of data**
   a. Refer to the Density Map of conflict locations (#5)
   b. Select the radial selection tool
   c. At the middle of the Cairo hotspot, click, drag to select a group of conflict locations
   d. Hover mouse over the selected area, click Group Members
   e. In Dimensions pane, right click on *Event ID Cnty (group)*, rename to "*Hotspots Groups*"
   f. Right click on *Hotspots Groups* > Edit Group > Rename groups according to location
   g. Select the other two hotspots (North Sinai, Benghazi) and repeat step f
   h. Drag and drop *Hotspots Groups* to filter box > Unselect 'Other'

Density Map of Conflict Events

8164 items selected · SUM of AVG(Longitude): 237

| Data Id: | 2772310 |
| Latitude: | 31.17 |
| Longitude: | 34.20 |

8. **Boxplot – Fatalities Monthly**
    a. Rows: SUM*(Fatalities)*
    b. Columns: *Hotspots Groups*, YEAR*(Event Date)*
    c. Filter: *Hotspots Groups* (unselect Other)
    d. Show Me tab > Click 'Box Plot'
    e. Right click on YEAR*(Event Date)* > Show Missing Values
    f. Marks box:
        ▪ Detail: *Event Date* > Expand until it shows MONTH*(Event Date)* > Remove the other two date formats
        ▪ Marks Type: Circle (switch the size of the dots)
    g. May consider filtering the later years which displays more fatality data

> Each circle represents each of the 12 months in a year.

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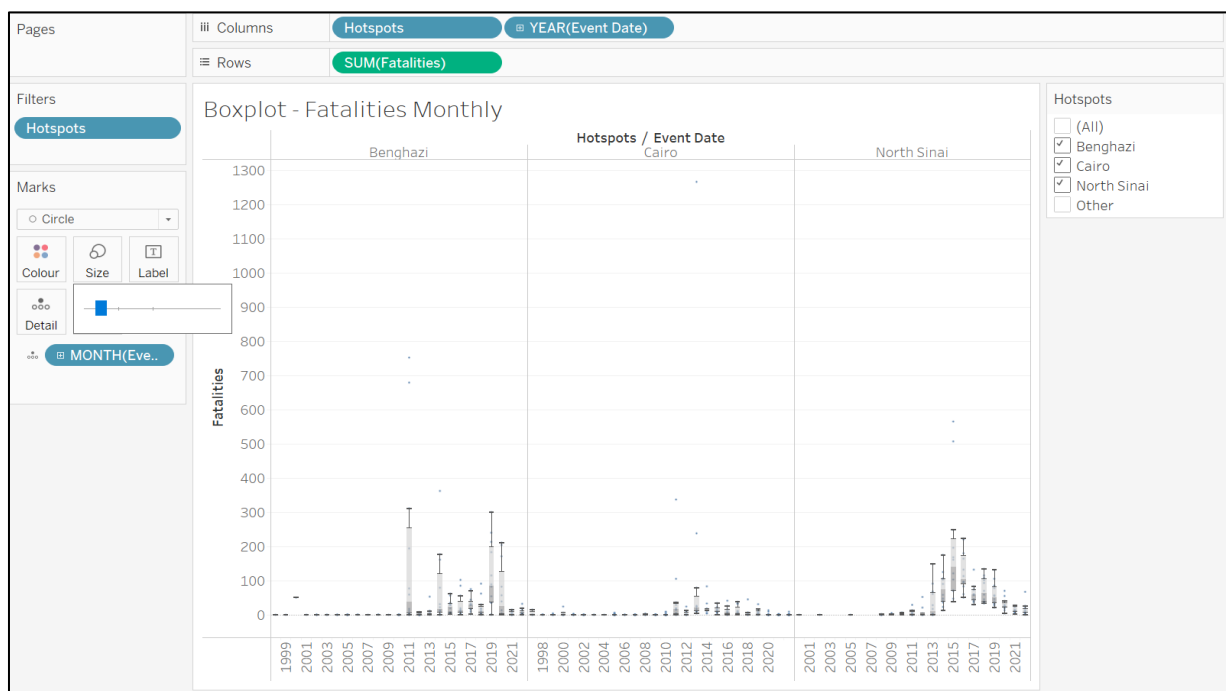
## 9. Create Dashboards or Story (Publish online)
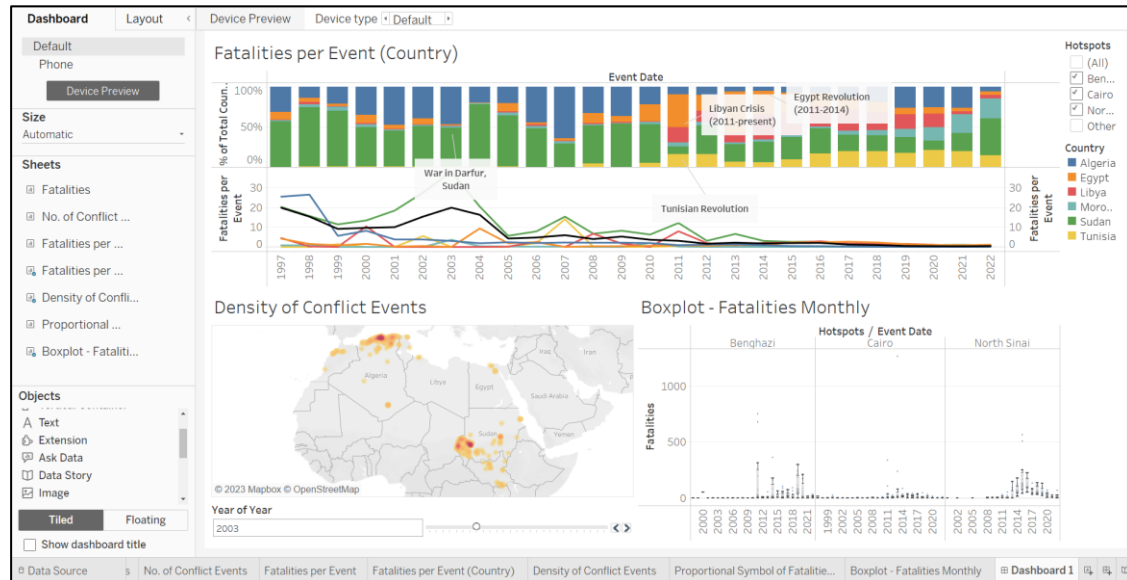


## 10. Load data from pdf documents

  a. New Data Source > PDF file > Select file > State page number: 362

  b. Double click on the data sheet

  c. Select "Use Data Interpreter"

  d. Rename column names to the relevant "Years"

  e. Top right corner > Click on Filter, Add > Select all the North African countries