

Lab Assignment – IA8 – Spatial and Temporal Datasets

Note on Software used for following Visualizations: (Tableau)

Microsoft Excel is a spreadsheet developed by Microsoft for Windows, macOS, Android and iOS. It features calculation or computation capabilities, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications (VBA). Excel forms part of the Microsoft Office suite of software.

It includes:

- Easy to access from different sources.
- No need for any technical or programming knowledge, and Quick response for making a dashboard.
- In terms of connecting and sharing, it has various inbuilt advanced features such as: Collaboration and distribution, highly securable, Multiple data sources connection, Easy importation and exportation of the massive size of data.
- For easy accessibility and analysis, the data file can be downloaded locally on mobile or desktop, multilingual representation of data, real-time exploration of any dataset, etc.

Q1) Choose a standard Spatial dataset and generate the visualization of selected spatial data:

Answer: Some Key points to note before visualization process:

1. Dataset Used:

The dataset used is the records of all earthquakes that occurred between 1970 and 2014. The link is as follows: <https://data.humdata.org/dataset/catalog-of-earthquakes1970-2014/resource/10ac8776-5141-494b-b3cd-bf7764b2f964> . It is a Geospatial-Temporal Dataset as it contains both data that correlates to region as well as time.

Tableau - Book1

File Data Server Window Help

Connections Add

earthquakes1970-2014 Text file

earthquakes1970-2014.csv 12 fields 5304 rows

100 rows

Filters 0 Add

Go to Worksheet

Sheet 1

209 marks 1 row by 1 column SUM of AVG(Distance): 837.15

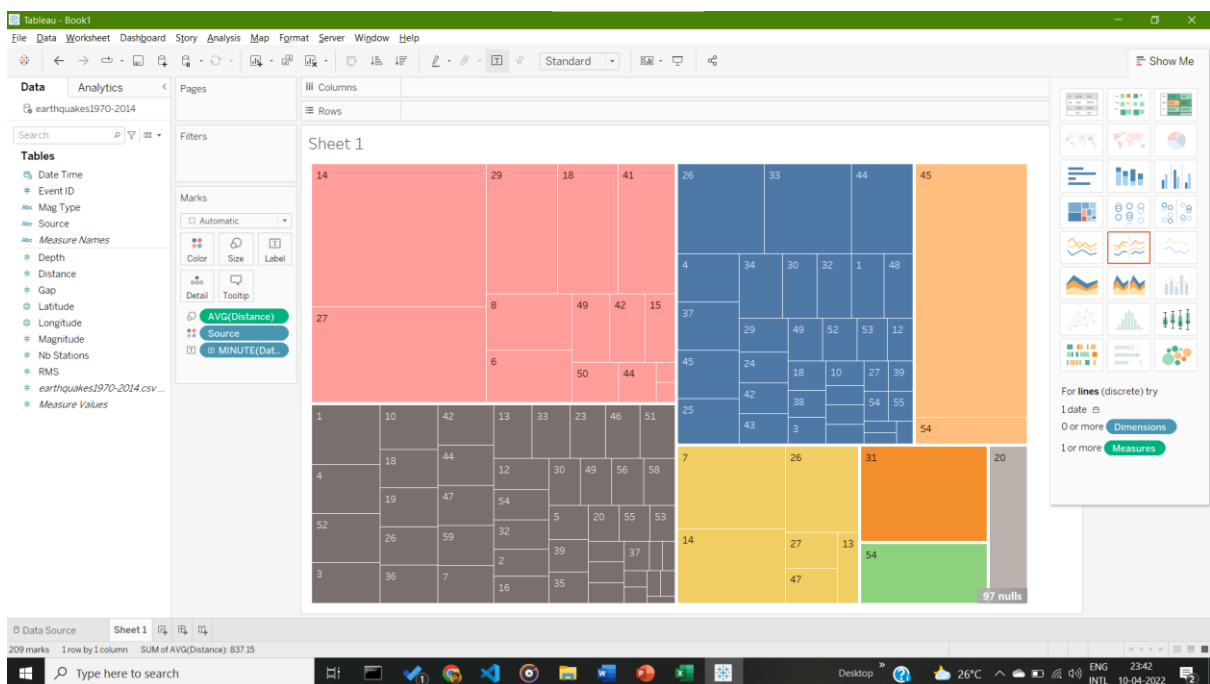
26°C 23:22 10-04-2022

Date Time	Latitude	Longitude	Depth	Magnitude	M...	N...	Gap
30-12-1899 00:00:40	24.139	102.503	31.000	7.50000	Ms	90	null
30-12-1899 00:35:52	-9.628	151.458	8.000	6.20000	Ms	85	null
30-12-1899 00:12:39	-34.741	178.568	179.000	6.10000	Mb	59	null
30-12-1899 00:07:09	6.825	126.737	73.000	6.10000	Mb	91	null
30-12-1899 00:05:39	60.280	-152.660	85.000	6.00000	ML	0	null
30-12-1899 00:19:51	-25.800	-177.349	80.000	6.50000	Mb	175	null
30-12-1899 00:33:05	42.519	142.966	46.000	6.40000	Ms	199	null
30-12-1899 00:51:38	7.017	-104.298	33.000	6.60000	Ms	140	null
30-12-1899 00:01:20	-12.579	166.370	50.000	6.40000	Ms	91	null
30-12-1899 00:08:48	15.532	-99.484	21.000	6.50000	Ms	100	null
30-12-1899 00:05:58	12.598	122.117	11.000	6.60000	Ms	94	null
30-12-1899 00:10:42	23.096	100.775	33.000	6.10000	Ms	57	null
30-12-1899 00:07:37	30.576	103.031	33.000	6.00000	Ms	94	null
30-12-1899 00:07:56	50.130	-179.590	7.000	6.00000	ML	0	null
30-12-1899 00:52:31	52.590	-175.040	161.000	6.10000	ML	0	null
30-12-1899 00:30:35	12.134	143.707	33.000	6.20000	Ms	82	null
30-12-1899 00:01:10	-19.008	168.603	41.000	6.50000	Ms	61	null

2. Visualization:

Visualization based on Distance (Denoted by size of boxes in tree map), Source (Colour – Spatial Element of Dataset), and Time of Earthquake.

a. Visualization using Tree Maps for Given Spatial Data



Inference:

The Spatial Source UW received the highest order based on average distance of 77.0 kms (14mins), followed by NC at 67.0 kms (45 mins).

Q2) Choose a standard temporal dataset and generate appropriate visualization for it:

Answer: Some Key points to note before visualization process:

1. Dataset Used:

The dataset used is the records of all earthquakes that occurred between 1970 and 2014. The link is as follows: <https://data.humdata.org/dataset/catalog-of-earthquakes1970-2014/resource/10ac8776-5141-494b-b3cd-bf7764b2f964> . It is a Geospatial-Temporal Dataset as it contains both data that correlates to region as well as time.

Type	Field Name	Physical Table	Remo...
Date Time	earthquakes1970-2014.csv	DateTi...	
Latitude	earthquakes1970-2014.csv	Latitude	
Longitude	earthquakes1970-2014.csv	Longit...	
Depth	earthquakes1970-2014.csv	Depth	
Magnitude	earthquakes1970-2014.csv	Magnit...	
Mag Type	earthquakes1970-2014.csv	MagType	
Nb Stations	earthquakes1970-2014.csv	NbStat...	
Gap	earthquakes1970-2014.csv	Gap	
Distance	earthquakes1970-2014.csv	Distance	
RMS	earthquakes1970-2014.csv	RMS	
Source	earthquakes1970-2014.csv	Source	
Event ID	earthquakes1970-2014.csv	EventID	

2. Visualization:

Visualization based on Sum of Distance (Denoted by size of boxes in tree map), Abd Magnitude (Denoted by Colour – Spatial Element of Dataset), Source (Text within Tree map boxes), and Time of Earthquake (in Minutes – temporal element of dataset).

b. Visualization using Tree Maps for Given Temporal Dataset:

