ARTG5330 Visualization Technologies

Assignment 3

Due: Friday November 7

Description

In this assignment, we will exploring drawing a treemap diagram, which visualizes the composition of the world's CO2 emission by country and by region.

The first thing to remember is that treemaps are a visualization of hierarchical relationships, and therefore, the underlying data must be in hierarchical form. To get a sense of what this hierarchy should look like, consult this example:

http://bl.ocks.org/mbostock/4063582

The challenge of this assignment is twofolds: we must be able to manipulate raw .csv data into a hierarchical form; then we must develop a layout function that turns this hierarchical data into a drawing ready format.

Objectives

- Practice using queue.js to concurrent request external resources;
- Practice using `d3.nest()` and `d3.map()` to manipulate the form of data;
- Practice using `d3.layout.treemap()`, and generally understand the usage patterns of hierarchical layout functions in D3;
- [Bonus]: basic user interaction patterns.

Task 1: Importing and Combining Data

The boilerplate code already takes care of data importing for you. You should pay close attention to how the two parsing functions are written, and understand the data transformation occurring at each step.

At this moment, data and metadata are separate. Your job is to incorporate metadata into the actual data object itself, so that each data object will have a region attribute:

```
{key: “Afganistan”, region:“Central Asia”, data: ..., series: ... }
```

Task 2: Transform Data into Hierarchical Structure

Within dataLoaded, turn the structure of the imported data from a flat array like this

```
[
{key: “Afganistan”, region: “Central Asia”, data: ...,},
{key: “Angola”, region: “Africa”, data: ...,}
```

```
  ]
```

into a hierarchical structure like this, using `d3.nest()`:

```
[
      {key: “Central Asia”,
      values:[
            {key: “Afganistan”, ...}      ,
            ...
      ]},
      {key: “Africa”,
      values:[
            {key: “Angola”, ...}    ,
            ...
      ]}
]
```

Task 3: Layout Function

Create a treemap layout function that anticipate the form of the data. As a hint, you need to set the `.children(), .value(),` and `.size()` attributes of the layout function.

Task 4: Pass Data to Layout Function, and Draw

This is the relatively easy part of the assignment. Represent treemap nodes using <rect>, and don’t forget the enter/exit/update pattern.

[Bonus]: User Interactions

We’ll take up potential user interaction strategies in class on October 31.