

Interactive Visualization Critique

ASSIGNMENT IV

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Interactive Visualization Critique

Snapshot of the Interactive Dashboard

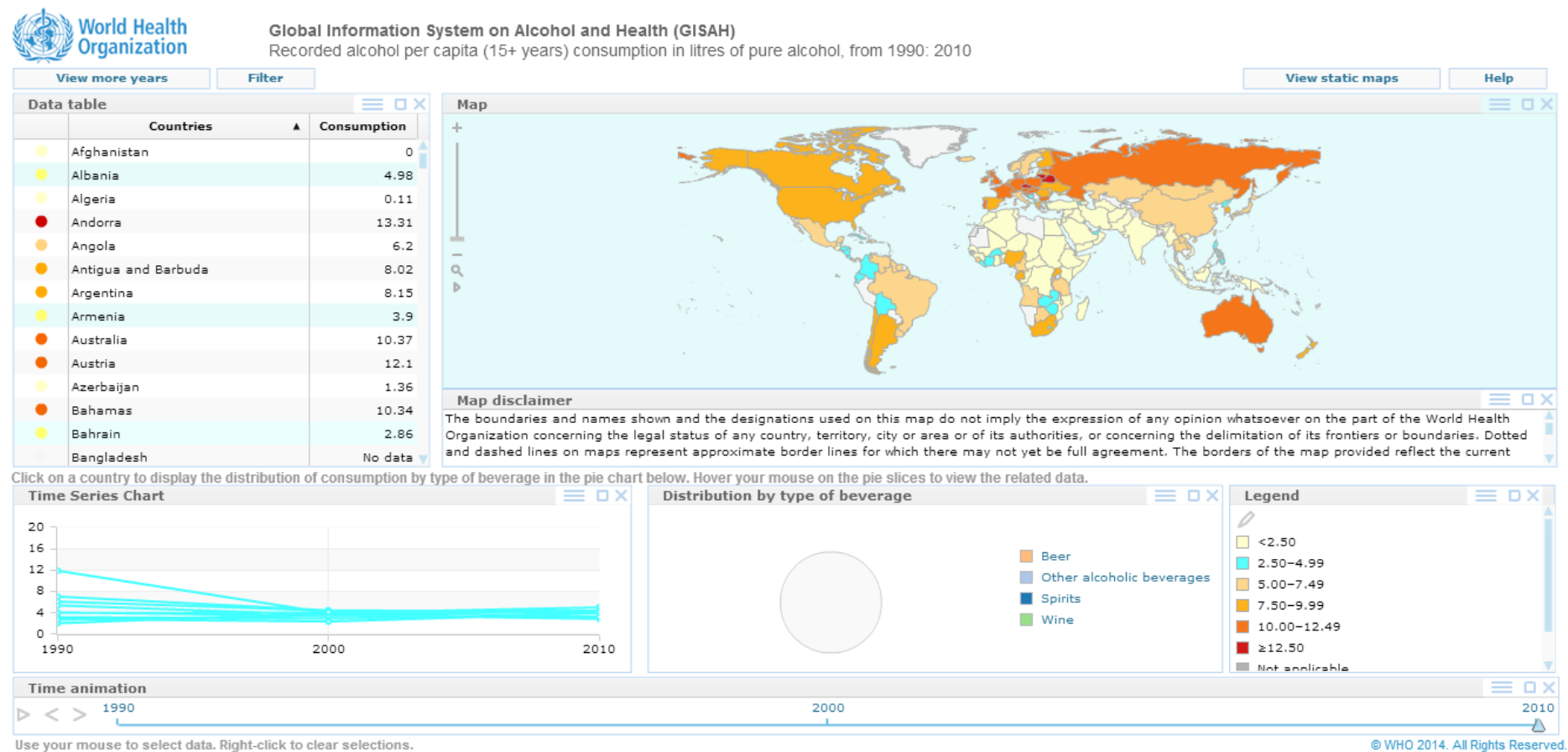


Fig. 1. Dashboard representing amount of pure alcohol consumed across the world

1. List the source of the visualization (a bibliographic citation is preferred, including the date if you can determine it). Include the creator and what you know of their background.

Source of the visualization: http://gamapserver.who.int/gho/interactive_charts/gisah/consumption_adult/atlas.html

Bibliographic citation: "Global Information System on Alcohol and Health (GISAH): Recorded Alcohol per Capita (15+ Years) Consumption in Liters of Pure Alcohol, from 1990: 2010." *WHO/ Pure Alcohol Consumption per Capita*. WHO, 2014. Web. 29 Apr. 2014.

Date Created: 2014

This was created by someone at WHO (World Health Organization) (©WHO 2014. All Rights Reserved), most likely for presenting the quantity of pure alcohol consumed across the world for those interested in this information.

According to Wikipedia,

"The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that is concerned with international public health. It was established on 7 April 1948, with its headquarters in Geneva, Switzerland. WHO is a member of the United Nations Development Group. Its predecessor, the Health Organization, was an agency of the League of Nations".

2. Who is the intended audience? What is its intended goal or purpose?

Intended audience

General public, with the following characteristics (broadly – need not apply to every single viewer):

Characteristics:

- Computer literate – knowledge of input devices like mouse, touch pad, etc.

- Ability to read in English

- Some knowledge of country names, world map, WHO, Alcohol

- Bowser and internet access and ability to use them

Further, this dashboard could also be used by people who wish to use it for their research or/ and presentation purposes, which may be related to alcohol consumption across the globe, or about interactive visualizations.

Intended Goal

The intended goal could be to portray the consumption of pure alcohol across the globe to the general public, possibly for public awareness about the increase in alcohol consumption or similar, across time.

The goal could also be for comparison purposes: as a means to convey to the audience which parts of the world, consume which type of alcohol, in what quantities (in terms of per capita), with respect to time.

3. What information does this visualization represent?

On a broad level, this visualization gives a distribution of consumption of pure alcohol on a per capita basis across the world. The countries are color-coded to indicate the bucketed quantities of pure alcohol is consumed in them on a per capita basis. Also. The type of beverage displayed in the pie chart is also color coded.

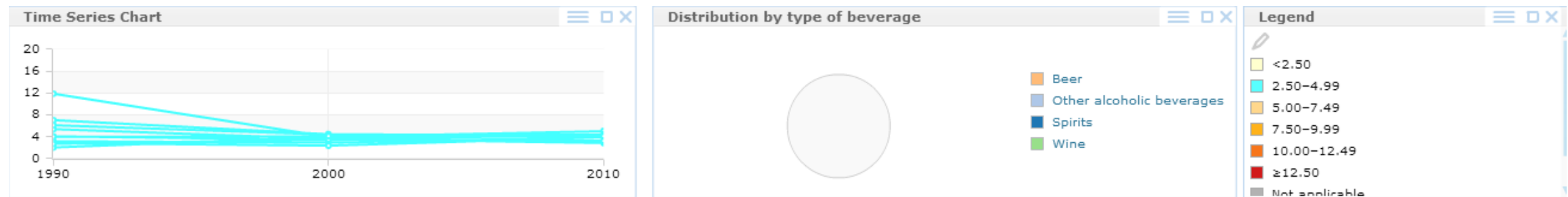


Fig. 2

This visualization is capable of giving the following information:

- Consumption of alcohol in different countries on a per capita basis.
- The groups of countries that fall in particular bucket of amount of alcohol consumed per capita
- A distribution by the type of beverage and its corresponding variation across time (1990 – 2010) for a specific country.
- The data table allows to select different countries (one at a time), and the corresponding information is displayed in all other panes (except the legend pane/window) which remains static throughout.
- The disclaimer about the map (particularly about borders), and the date of publication (2014).
- The top of the page provides information (title and name of the organization) about the visualization, and thus gives context.
- There's a Help button option, which informs the user that there could be some helpful information that can be accessed via it if he/she gets stuck or is unable to perform something that he/she believes he/ she can do in this dynamic visualization.
- There is a "View Static" button option, which conveys to the user that there are static visualizations as well that can be viewed through it.

4. How many data dimensions does it encode? Are the encoding mappings appropriate?

Dimensions are those things you want to track. They're referrers, pages, country of origin, product category and other items whose attributes are often non-numerical.

Source: <http://www.newmediamarketer.com/dimensions-vs-measures/>

This visualization encodes the following dimensions:

Categorical/Nominal data:

WHO Region (Africa Americas, Eastern Mediterranean, Europe South-East Asia, Western Pacific)

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Country Name

Income Level (High, Low, Middle)

Interval data

Years (1990, 2000, 2010)

So, there are 4 dimension that have been encoded here.

We believe that the encoding has been done well (except in the case of the Income Level - it states United States in the Low Income Category, which should be an error).

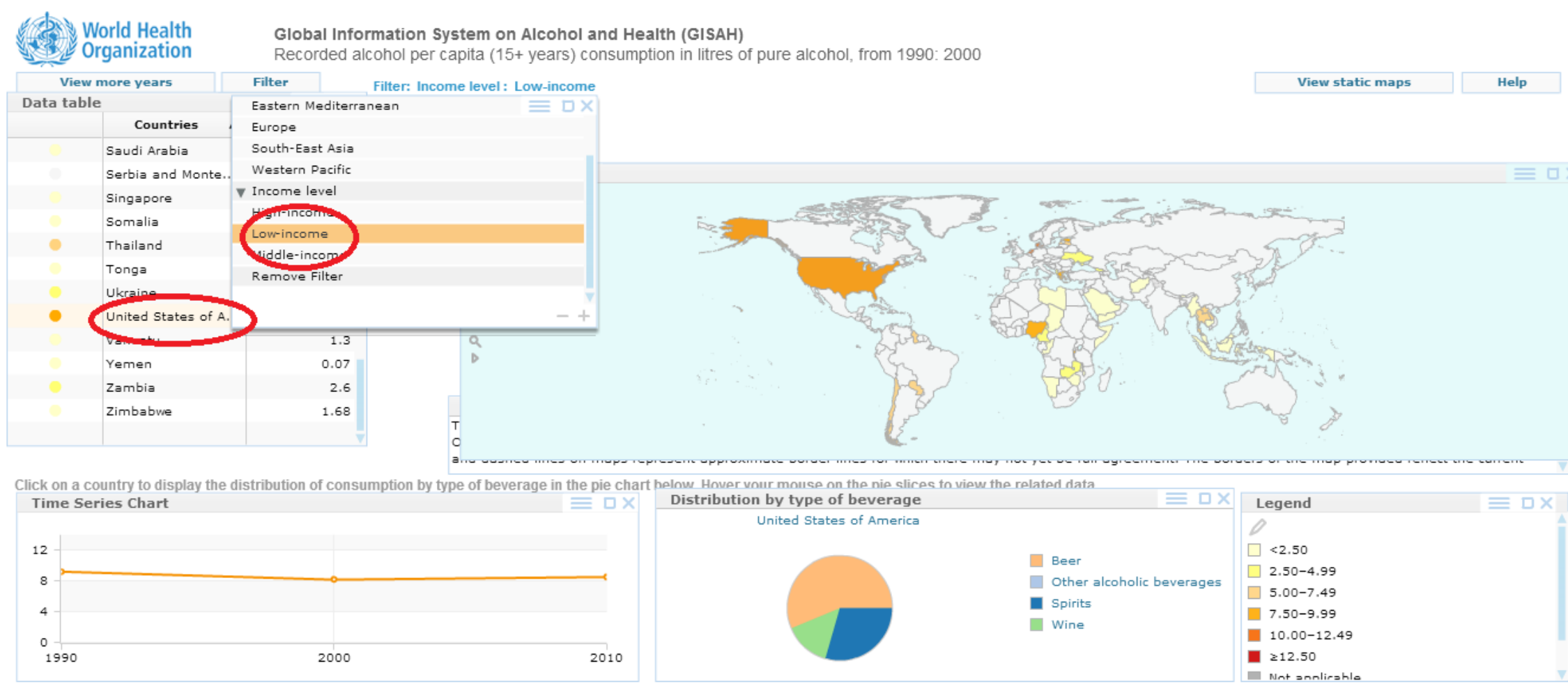


Fig. 3

5. List several tasks, comparisons or evaluations it enables.

It enables the following:

- a. Allowing the user (intended audience) to see the consumption of pure alcohol in different countries on a per capita basis.
- b. The user can get a close up on specific locations in the map as it supports zooming and panning.
- c. On clicking the individual buckets in legend, it highlights the countries which correspond to the selected (by hovering/clicking) bucket option.
- d. At the same time, it also provide time related data for the particular selection in the time series chart.
- e. Clicking on counties provides a distribution by the type of beverage in the pie chart, and a corresponding visual in time series chart. Along with this, the per capita amount of alcohol consumption along with the name of the country is displayed in a tool tip.
- f. It allows the user to drag, resize, close and get back the different boxes/ windows as required.
- g. It allows the user to restore the layout to default configuration.
- h. It allows the user to select and clear filters as required, along with a few other related things, which are accessible through the menu that appears by right-clicking anywhere on the screen.
- i. Hovering on a country provides the per capita amount of alcohol consumption along with the name of the country, displayed in a tooltip.
- j. The data table allows to select different countries (one at a time), and the corresponding information is displayed in all other panes (except the legend pane/window) which remains static throughout.
- k. It allows the user to look for possibly helpful information through the Help button.
- l. It allows the user to view the static visualizations through the View Static button.
- m. It allows the user to get more information on WHO 2014 through the link provided in the bottom right corner of the page.
- n. It enables comparisons through time series chart and the map by allowing multiple selections in the Data table.
- o. It allows viewing (filtering) things as per WHO regions, countries, income level, and years (1990, 2000, and 2010).

6. What principles of excellence best describe why it is good?

The following principles of excellence attest to its goodness:

1. Interesting data (its multivariate)
2. In shortest time – all the relevant data is available on a single screen at the same time, and no noticeable lag.
3. In smallest space – no scrolling required.

In terms of graphical integrity,

1. Everything is labelled carefully
2. Data is presented in context

PS: Another thing that could have been a part of this list is Accurate Communication (Lie Factor)

There's no incorrect information conveyed (deliberately or otherwise) through design or facts [to the best of our knowledge], except for one place we think there's an error where USA has been categorized under low income groups.

7. List at least three strengths and three weaknesses of the visualization.

Strengths:

1. There is individual windows/ boxes can be moved around which allows the possibility of user specific design as per their needs.
2. Very high modularity: any information that the user doesn't need can be easily removed from the screen by closing that specific window. The high modularity enables the user to be picky of what he wants to see, thus aiding in customization, and subsequently decreasing cognitive overload and the amount of ink.

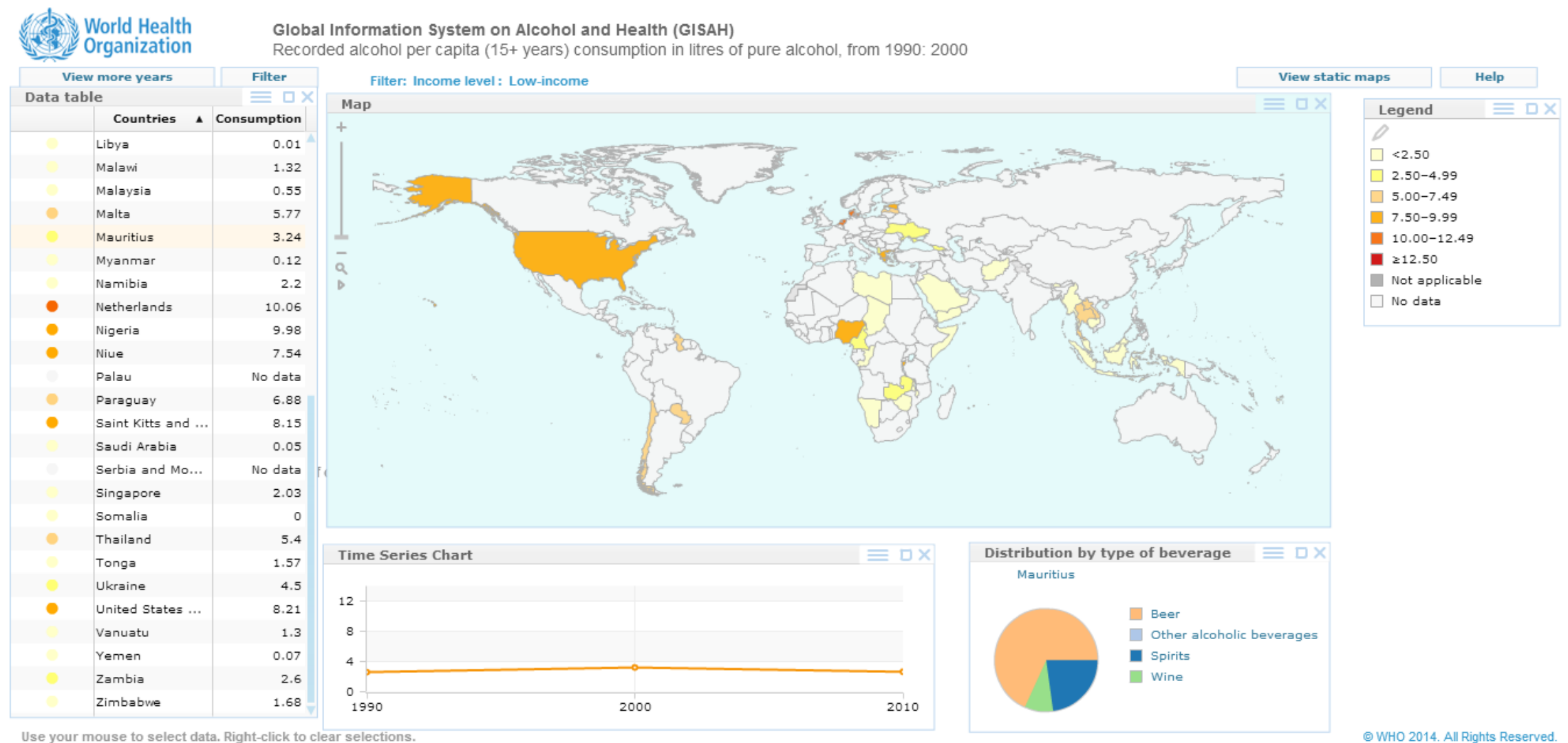


Fig. 4

3. Minimal amount of colors are used to convey the idea, without colorful decorations or similar, thus reducing cognitive overload in this regard.
4. The color scheme chosen for reflecting the selected choices are very visible and extremely different compared to the other colors used.

5. The response time for reflecting the changes in the map, the pie chart and the time series chart is almost instantaneous.

Weaknesses:

1. The Use of the pie chart to encode alcohol distribution on the bottom suffers from the common to all pie chart problem: it is harder to accurately compare the areas of the circle.

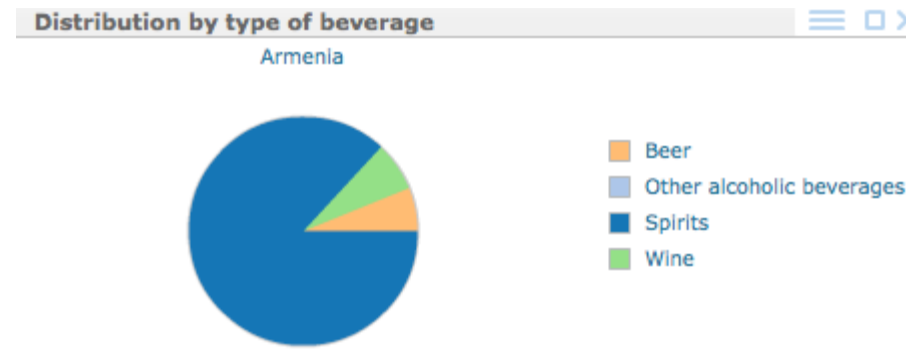


Fig. 5

In this example it seems that wine and beer are identical when they are not

2. If user selects small country like Armenia on the list: it is not visible on the map so Brushing and Linking fails at 1st glance.

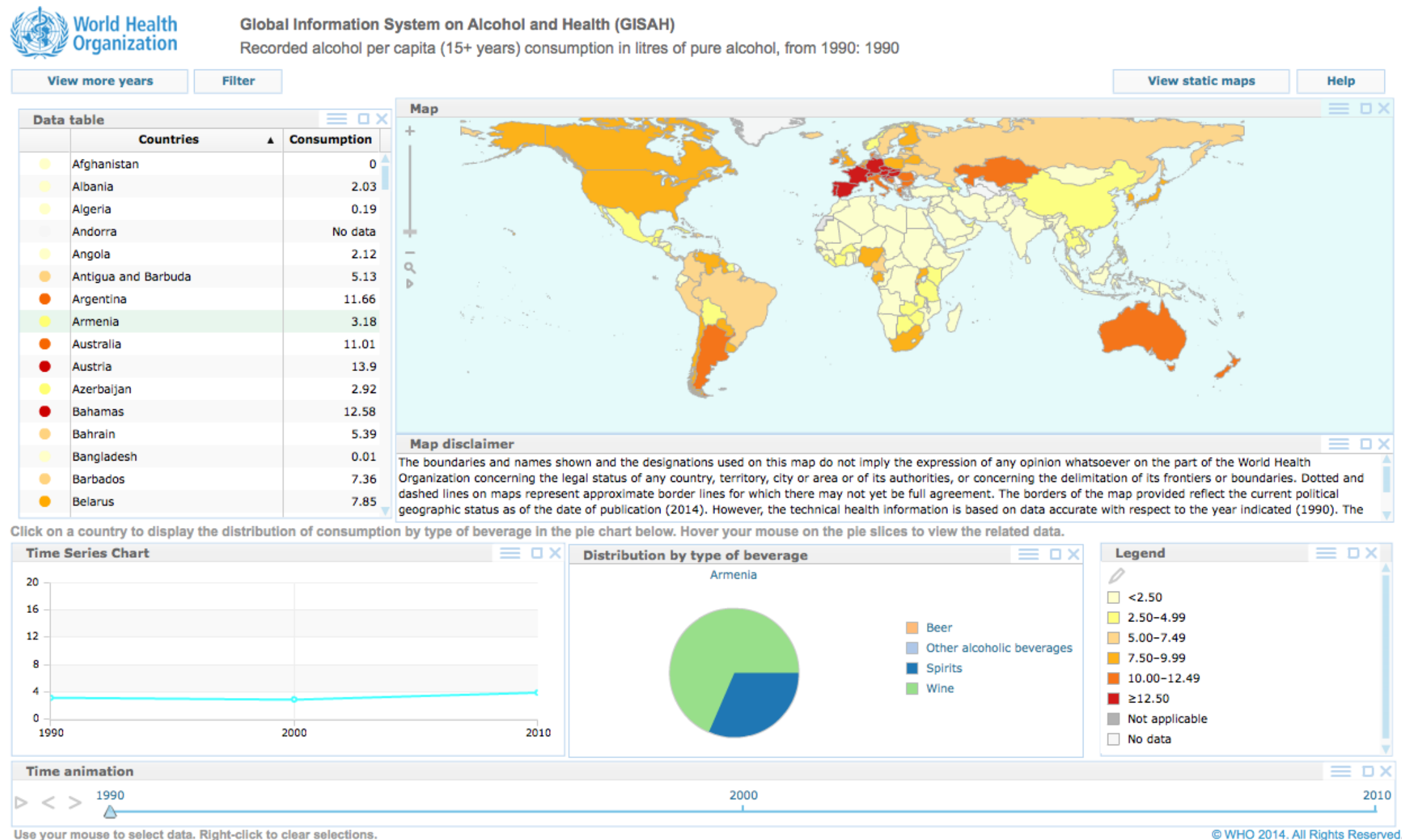


Fig. 6

However when we zoom in closer we can see that it did indeed work as expected, except the area was too small to notice at first.

- Third weakness of this visualization is the ability to add more years to time-series plot. When clicking on the tab above we assume that we can view more years than are already in the graph, when in reality it is not possible, i.e. all years are already displayed.



Fig. 7

This however seems to be the labeling issue as selecting the year in this table moves the bottom slider and shows the distribution accordingly.

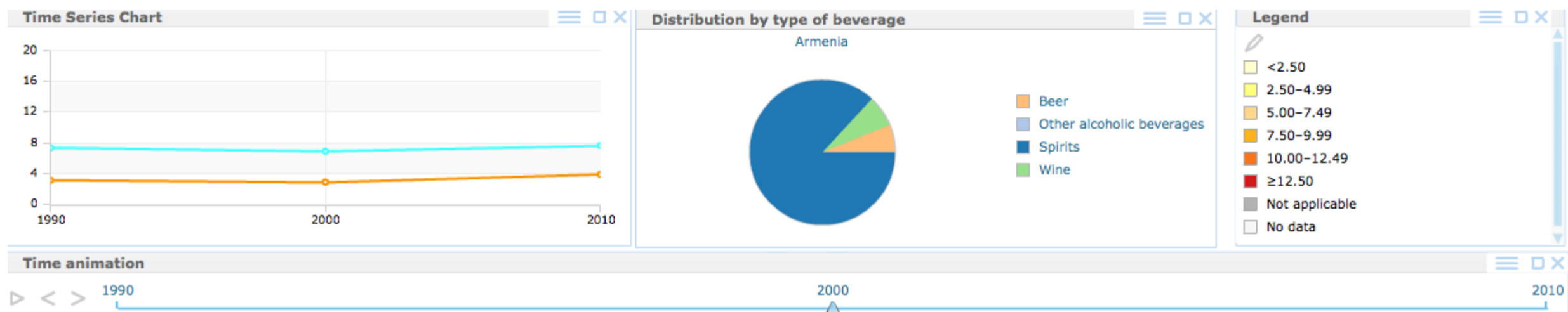


Fig. 8

4. Map disclaimer takes too much space in the middle of the visualization.
5. Time animation is on the bottom of the page and is not noticeable at 1st.

8. For interactive visualizations, which of Shneiderman's (1996) infovis tasks does it support and how?

We have started our analysis with Shneiderman's mantra (1996) "Overview first, zoom and filter, then details-on-demand." The current visualization enables to see the same dataset from different angles.

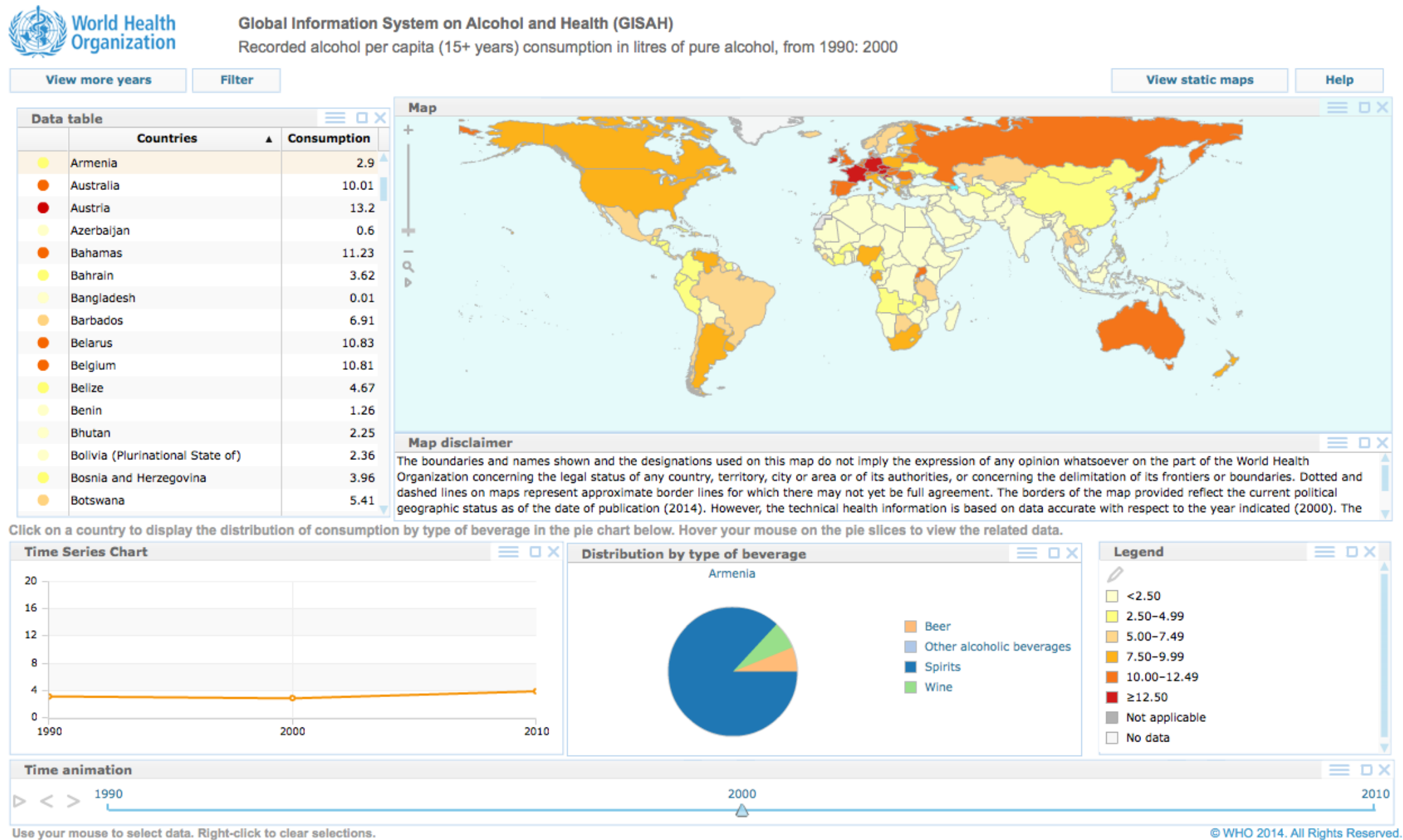


Fig. 9

It has a table view with list of countries and consumption per country, map view with color coded legend, time-series chart that shows consumption per capita per year between 1990 and 2010, pie chart with distribution of beverage by wine, beer, spirits and other and time animation on the bottom that shows the animated change for distribution by type for the year.

This visualization supports most of the Shneiderman's tasks (1996):

- Overview. The map view with color coded intensity gives us large overview. We can notice right away that countries colored dark orange like Australia and Russia have high level of consumption 10-12.49 liters per capita and some countries in Africa are pretty low on consumption.
- Zoom. Map portion of the dashboard allows zooming in to particular country
- Filter.

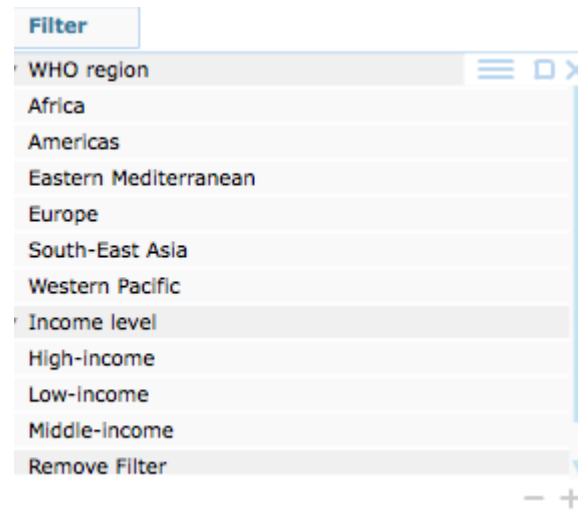


Fig. 10

As we can see not only we can filter this display based on the region but also based on the Income Level, which is not displayed on any of the visualization.

- Details on Demand. The visualization allows to see details of the consumption per country once user clicks on the map



Fig. 11

- Relate. Compare trends between few countries in the Time Series Chart:

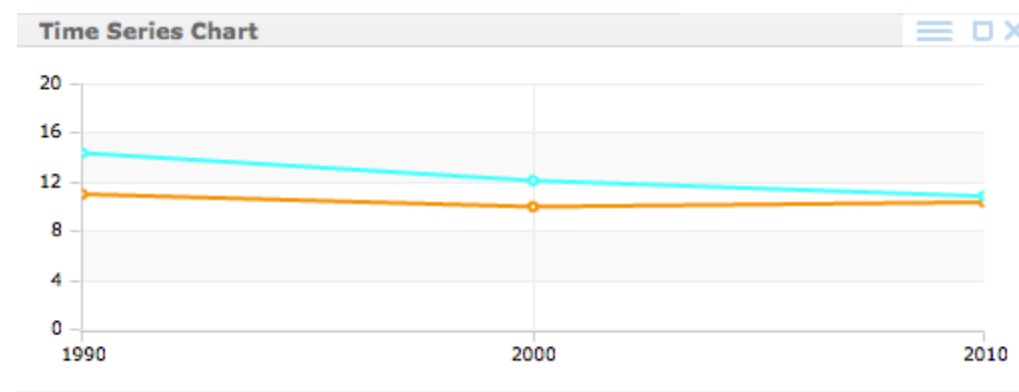


Fig. 12

- Extract. Right-click menu allows user to write notes by adding text and export the data, print it for the historical measure.

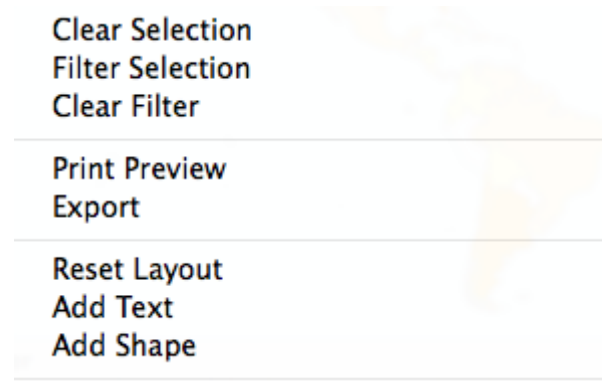


Fig. 13

It also supports following basic interaction techniques like:

- Selecting. Mouse Click (Lecture April 22 2014, slide 23)
- Hover. Provides details on demand and enables Brushing and Linking
- Sort. Sorting Data by Consumption shows us the countries who had the most consumption for the particular year (2010): We can see that Belarus, Andorra, Lithuania, and Czech Republic are the worst countries and have the highest level of consumption of alcohol per capita.

Data table			
	Countries	Consumpt... ▼	
	Namibia	No data	▲
●	Belarus	14.37	
●	Andorra	13.31	
●	Lithuania	12.9	
●	Czech Republic	12.69	
●	Grenada	12.4	
●	Austria	12.1	
●	Ireland	11.92	
●	France	11.7	
●	Saint Lucia	11.6	
●	Estonia	11.36	
●	Luxembourg	11.36	
●	Germany	11.21	
●	Russian Federation	11.12	

Fig. 14

- Delete. Selecting the graph in time series user can delete selection by selecting Clear Selection Menu item

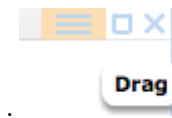


Fig. 15

- Rearrange. This icon enables to rearrange the entire visualization according to user's preferences. The downside is that it's not easily discoverable.
- Advance Interaction techniques (Lecture April 22 2014, slide 23):
- Brushing and Linking
- Panning and Zooming.

9. Does the visualization serve its intended purpose, in your opinion?

We believe that this visualizations indeed serves the purpose of giving a general overview of the consumption of alcohol per capita in the world and allows the comparison between countries and also yearly trend for each country.

10. Can you suggest any improvements?

It has minor weaknesses that can be improved. For example we believe it would make more sense to change the pie chart to a bar graph that shows distribution of type of beverage. Changing Label from View more years to View by Year would make the functions of the filter clearer. Removing the map disclaimer from the center of the visualizations and putting it on the very bottom with smaller font. Making the icon for the drag function more prominent. Finally last improvement we suggest is around brushing and linking countries that are super small on the map. We suggest using zoom to when we select them/hover over them.

11. Why do you like this visualization?

We liked this visualizations because it displays coordinated multiple views that "enable analysts to see their data from different perspectives" (Chapter 5,Few 2009). It is a good example of the dashboard that we might use for our final project. In addition to being high quality visualizations we can confirm some stereotypes about countries like Russia or Australia about consumption of alcohol and distribution of it.