Expert Evaluation - Provided by Studio 1, Group 2
Jeremy Clark, Nathaniel Burbank, Bruno Carriere

This evaluation is in regards to the project plan documents presented to us by Group 3, starting on page 3.

General points:

- Maybe spend a bit more time on the bubble chart, it's not 100% clear what it's used for
- I love the tree viz, I wonder how best to show the data associated with that cause / subcause. It would be cool if next to each tree node, you would have a percentage (based on the country / region filter selected). So say you have Injury (23%) when you click it, you get the percentage breakdown by subcategory - Self Harm 13%, Violence 9% etc… Then when you change countries, you animate percentage change. OR, you can scale the size of the tree nodes to fit with the percentage. That would be a really cool looking animation.

Scenarios

1.a) This can only be assessed pretty well on the stacked area chart. Filter the data and look at the curves across the years.
1.b) This one I don't see how to find out, other than with the data table. If this is a major use case, it should be maybe more obvious. If you do have the data, one thing that could work is to split the tree node (for example) in vertical halves that show the gender proportions
2. a) I don't think this visualization would make it easy to find that out! You would have to be able to filter the MAP by a certain percentage of disease threshold.
2 b) That is somewhat easier to find out by selecting the region and sorting the diseases by incidence in descending order

Some additional Heuristics:

1) Regions: Geographic or not? : Severity 2

Personally, I think of regions geographically. It may be confusing to think of regions as demographic or economic groupings. How can someone 'see' how regions map geographically to countries?

2) Zoom in, zoom out: Severity 1

As defined, it may not be obvious that clicking on a zoomed-in country will zoom out and zoom-in, zoom-out buttons may not make sense if the only way to zoom in is to click on a country (when zoomed out, what will the zoom in button do)?

3) Causes and Regions: Severity 2

Causes and regions are separated into different views or tabs, and then 'reassociated' by offering a region dropdown on the causes tree. It might be helpful to somehow link the causes wordle to the causes tree, and when you hover over a node in either vis the associated cause is 'highlighted' in the other vis. Otherwise there might be some redundancy hidden in separate views, which could confuse or slow down a user.

4) Linking a category of DALY causes to a country: Severity 2

How can I quickly see what communicable diseases (as a category of DALY impact) are linked to a specific country? The task as outlined suggests checking against threats against regions, but as a traveller, I will likely want to make decisions based on country and not region (especially if regions are geographically disjointed).

5) Linking age to a cause and a country: Severity 3

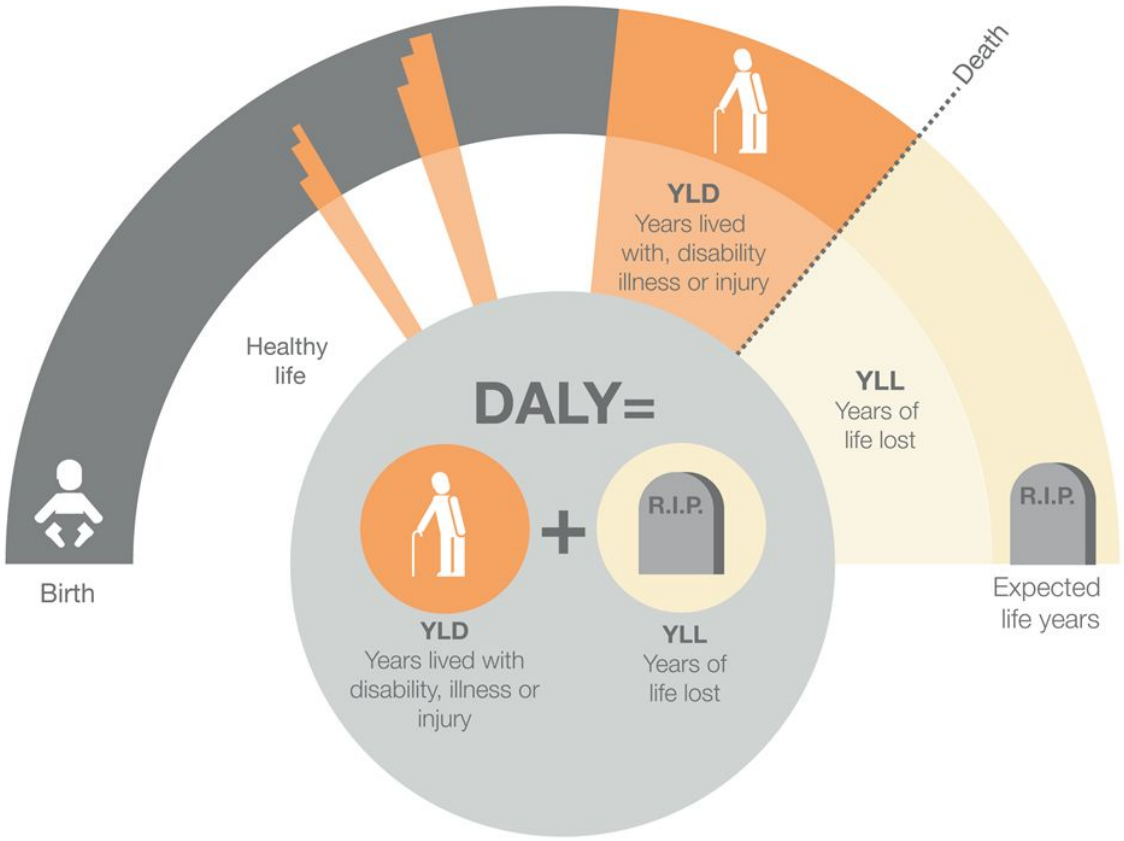
Also regarding task #2 - discovering what communicable diseases are threatening to me would probably have something to do with the distribution of age associated with that disease (i.e., a disease that affects primarily infants doesn't pose a large threat to me). The bubble chart could be helpful in mapping ages to causes (and possibly regions) but again I didn't see a clear linkage to a country from that chart. This issue and the previous may be an issue with what data is available.

6) Impact on the world - the 'how' and the storytelling: Severity 3

You state: "Our project aims to learn how diseases and disabilities have impacted the world". The visualizations presented definitely allow for see 'what' diseases and disabilities impact various regions of the world, but how can I discover 'how' they are impacting the world? It's definitely a stretch and would require some more data, but maybe a tidbit like immigration rates between regions or some other basic stat about GDP or something else to indicate 'how' DALY affects a region or country in some other socio-economic way.

Disability-Adjusted Life Years (DALY) From Around the World

Zhejing Luo, Jonathon O'Reilly (Group 3)



The **d**isability-**a**djusted **l**ife **y**ear (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death. DALY is a highly valuable metric for understanding public health status.

Our project aims to learn how diseases and disabilities have impacted the world by creating effective DALY data visualization.

Dataset

The DALY estimates between 2000 - 2012 are published on the WHO official Global Health Observatory (GHO) data repository (http://apps.who.int/gho/data/node.main.DALY?lang=en).

Available dimensions: Causes, Age, Sex, Region, Country, Income Group

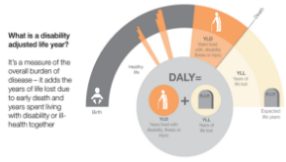
Sample:

		2012	2012	2012	2012	2012	2012
		Both sexes	Female	Female	Female	Female	Female
Region	Causes	All ages (total	0-27 days	1-59 months	5-14 years	15-29 years	30-49 years
High-income	All Causes	388,667,723	2,140,761	2,531,291	3,636,272 4,3	13,743,677 1	33,434,240 3
High-income	Communicable	26,468,870	1,470,351	965,222	498,702	1,055,234	2,132,445
High-income	Infectious and	11,675,618	35,122	386,704	137,918	439,019	1,260,271
High-income	Tuberculosis	1,538,846	246	1,665	1,691	59,206	141,836
High-income	STDs excludin	438,813	2,188	1,145	4,531	100,363	125,197
High-income	Syphilis	28,537	2,188	1,145	316	606	1,905
High-income	Chlamydia	162,601	-	-	1,042	26,031	22,398
High-income	Gonorrhoea	87,647	-	-	677	16,187	20,678
High-income	Trichomoniasis	27,628	-	-	566	15,727	9,955
High-income	Other STDs	132,400	-	-	1,930	41,813	70,261
High-income	HIV/AIDS	3,861,568	207	22,934	5,748	135,950	666,413
High-income	Diarrhoeal dise	1,767,199	3,100	220,970	46,619	58,823	118,444
High-income	Childhood-clus	58,793	2,266	20,260	1,061	300	398
High-income	Whooping cou	40,338	1,148	15,165	140	43	115
High-income	Diphtheria	1,140	2	185	179	28	1
High-income	Measles	12,451	-	4,900	691	190	162
High-income	Tetanus	4,864	1,117	10	51	39	120
High-income	Meningitis	394,541	2,289	31,893	11,889	17,981	27,434
High-income	Encephalitis	67,580	159	5,886	1,777	3,305	4,814
High-income	Acute hepatiti	154,479	815	1,449	1,504	1,841	8,420
High-income	Acute hepatiti	562,894	8	130	137	1,302	26,331
High-income	Parasitic and v	114,029	562	22,234	6,024	5,300	6,976

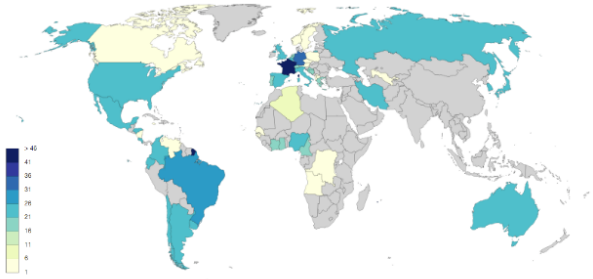
Web Layout

Disability-Adjusted Life Year (DALY) | Explore Causes | Regions

What is DALY?
- The disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.
- Maybe a few more facts about what we are trying to achieve with the visualizations



DALYs for Year 2000 ▼



World Info	
All Causes	10000
Communicable & other Group I	9000
Noncommunicable Diseases	8000
Injuries	7000

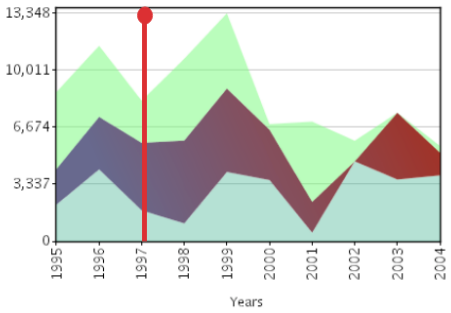
The graph to start will show each countries All Causes for year 2000 (http://apps.who.int/gho/data/node.main.DALYCTRY?lang=en). This will also be an interactive Choropleth graph. Click to populate with top 5 of country of choice

Data here from http://apps.who.int/gho/data/node.main.DALYRATEWORLD?lang=en initially then will be taken

Disability-Adjusted Life Year (DALY) | Explore Causes | Regions

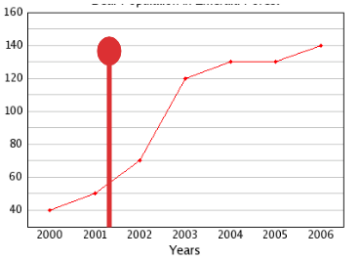
Region

Stacked Area Graph of all Causes

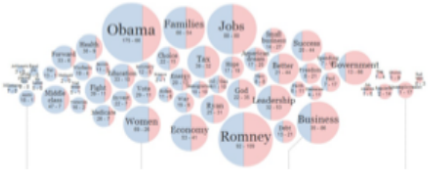


All Causes

Indicators

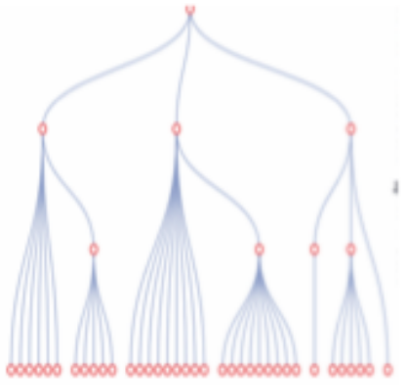


Top Cause in relation to gender and age



List countries in this region

Disability-Adjusted Life Year (DALY) | Explore Causes | Regions



Information about causes here

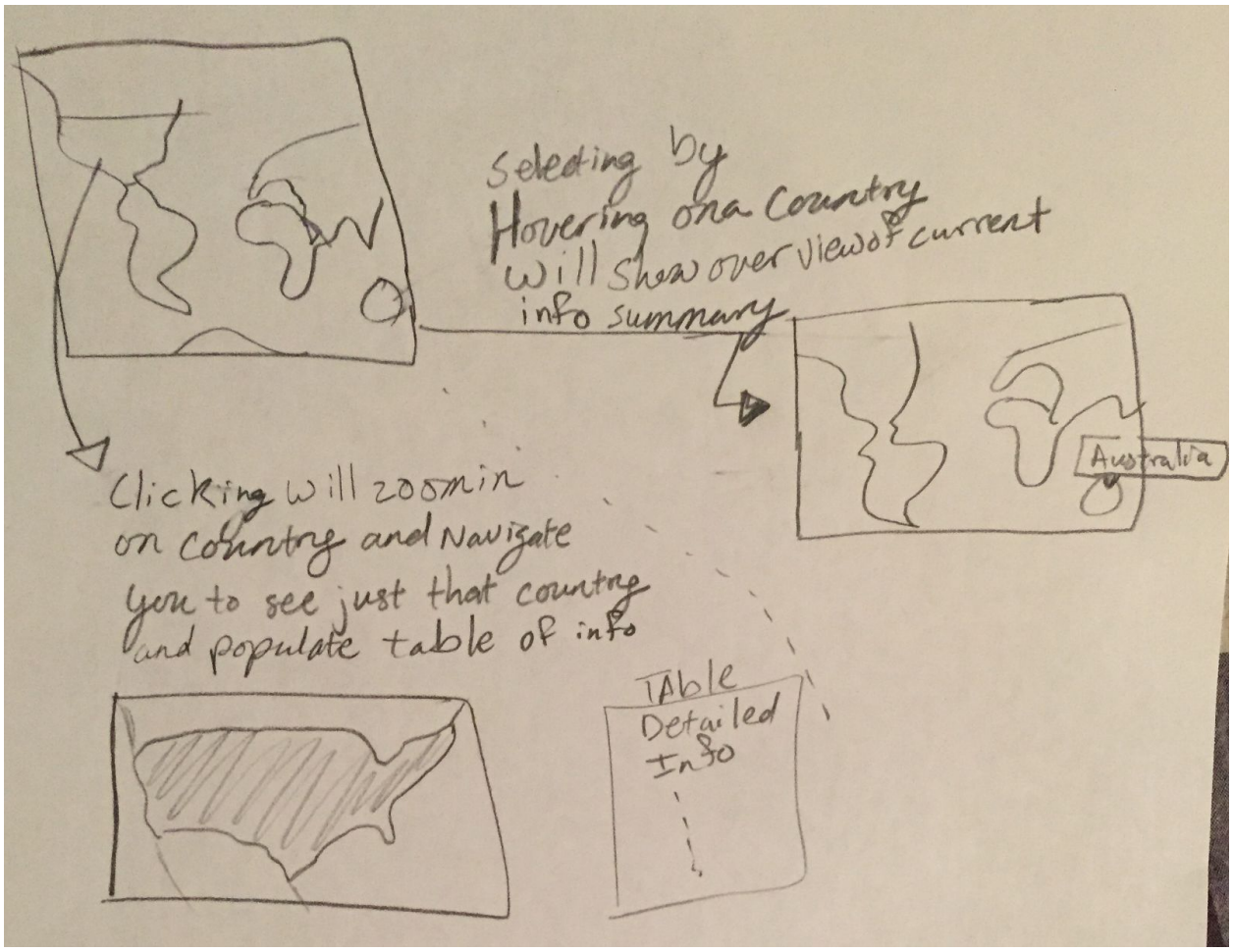
To see how causes affect specific regions. Select a Region.

Regions ▼

Sketches & Storyboards

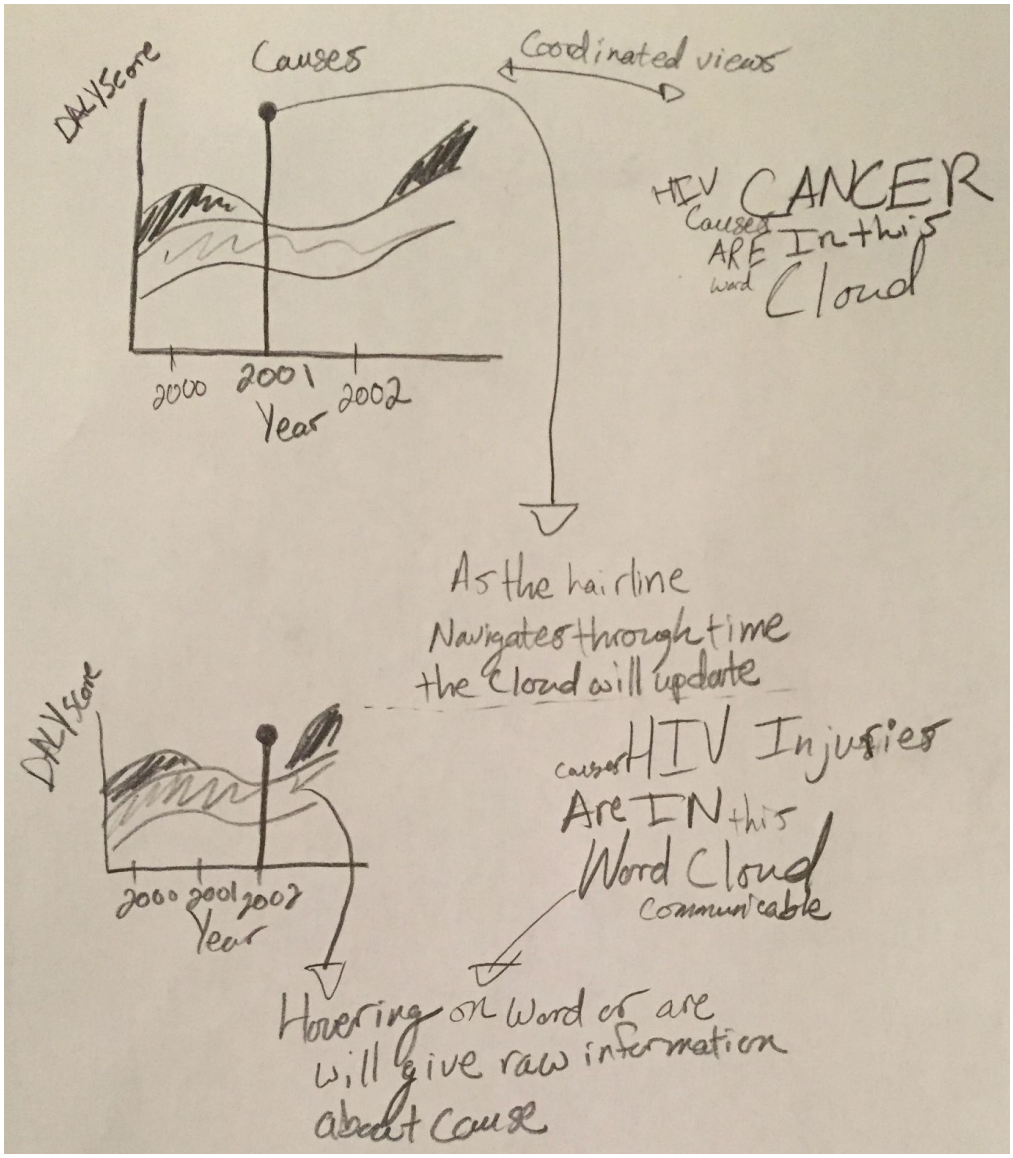
Visualization: We plan to use 2~3 main complex visualizations, and some smaller supporting visualizations to present the data. Only 3 main visualizations are shown here, you can see the concept of other ones in web layout section above.

1. **Choropleth Graph (Main viz)**



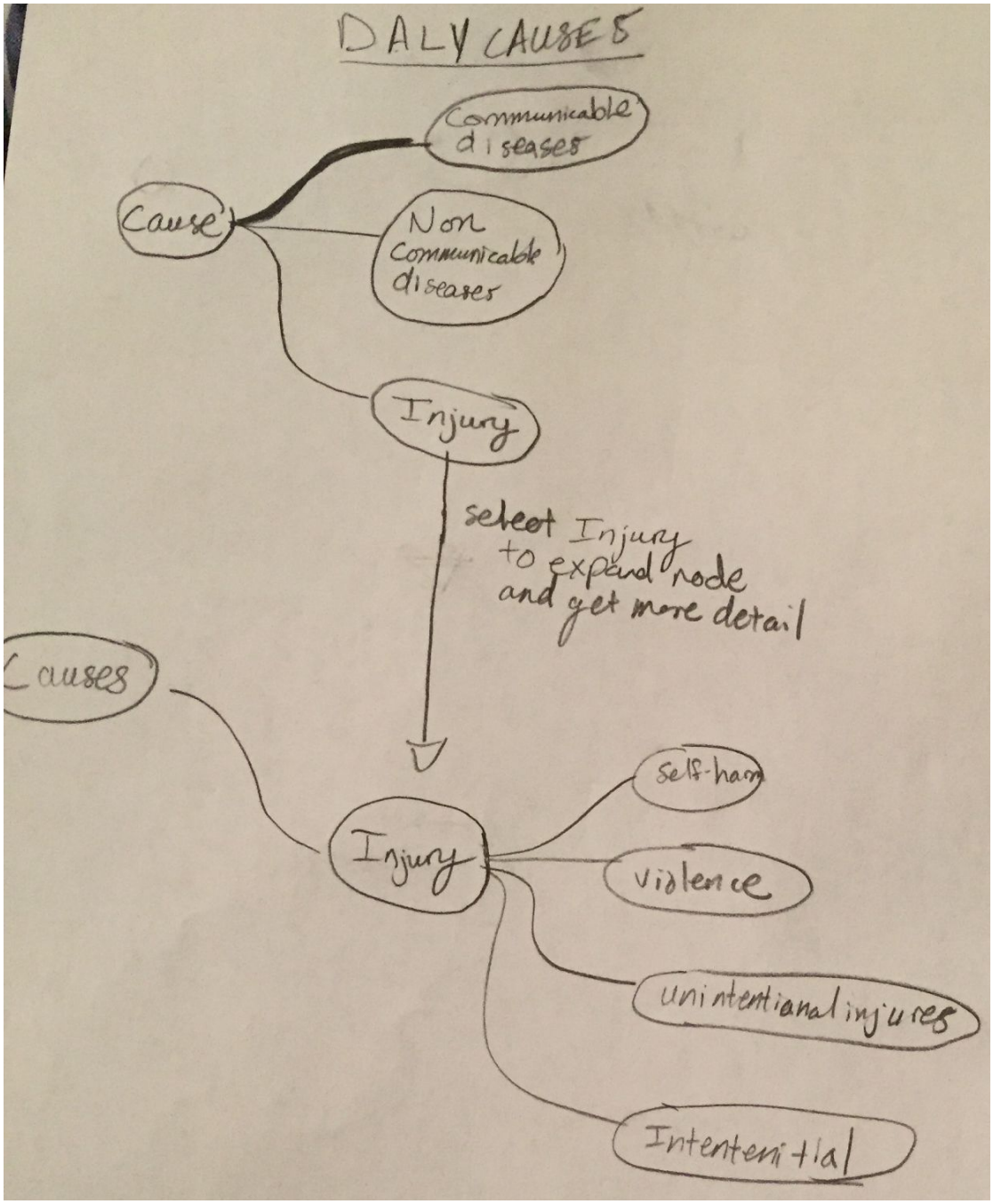
1) Initially this would be used to show the overall outlook of the world and all countries as a whole.
2) Clicking on a country will zoom into the country you want to look at, in addition to loading information about that country in a table.
3) Clicking a second time on the country will zoom the user out or we will provide zoom in and out buttons.
4) In addition to this, hovering over a country will provide a summary amount of information.

2. Stacked Area & Word Cloud (Main viz)



- Stacked Area chart
    - A hairline will give the ability to go through time which will then update both the Word Cloud and Bubble Chart
    - Hover on the area to get more details of a cause
    - Clicking on a given cause will only show that cause
        - Will need to determine exactly how the Word Cloud changes for this
        - But Bubbles would automatically change to represent the selected area
- Word Cloud
    - This will display all causes the largest being the cause that has the largest DALY
    - Clicking on a word will change the Bubble Chart
    - Ability to invert the causes so the smallest DALY will now be the largest (optional)
    - Hover on the word to get more details of a cause

3. Cluster tree (Main Viz)



This simple but effective viz will be used to show the structure of multiple groups and subgroups of DALY causes. For example, there are a large number of causes like HIV and malaria under the Communicable Diseases group. The complex structure can be clearly shown in this viz.

- Select and Navigate a given node to which a user selects
    - This will expand and show more details of a given cluster tree section
- Hovering on a given node will give more detail about a specific year

Scenarios & Tasks

1. You are a public health researcher. You want to find out which DALY's are affecting people's quality of life in the past decade.
    a. Find out what DALY’s are rising in given countries or region around the world.
    b. Which DALY causes affect one gender more than the other?

2. You are a world traveller. Unfortunately you have a rare condition that makes you allergic to most of the communicable disease vaccines.
    a. Find out what regions are safer for you to travel in.
    b. What diseases will you have to look out for in the region you plan to go to?