

# Visualization Project Proposal

## 1. Basic Info

- **Project title**

Course of Child Mortality

- **Members**

|             |          |                                                                |
|-------------|----------|----------------------------------------------------------------|
| Guannan Wei | u1011931 | <a href="mailto:guannan.wei@utah.edu">guannan.wei@utah.edu</a> |
|-------------|----------|----------------------------------------------------------------|

|             |          |                                                                |
|-------------|----------|----------------------------------------------------------------|
| Yongjian Mu | u1010337 | <a href="mailto:yongjian.mu@utah.edu">yongjian.mu@utah.edu</a> |
|-------------|----------|----------------------------------------------------------------|

|          |          |                                                          |
|----------|----------|----------------------------------------------------------|
| Shan Wei | u0974032 | <a href="mailto:u0974032@utah.edu">u0974032@utah.edu</a> |
|----------|----------|----------------------------------------------------------|

- **Link to the project repository**

<https://github.com/shanwei15/dataviscourse-pr-Causesofchildmortality>

## 2. Background and Motivation

Many children die of diseases every year all over the world. To make efforts to improve child survival can be effective only if they are based on reasonably accurate information about the causes of childhood deaths. Cause-of-death information is needed to prioritize interventions and plan for their delivery, to determine the effectiveness of disease-specific interventions, and to assess trends in disease burden in relation to national and international goals [1].

## 3. Project Objectives

- Figure out which disease courses the most death rate of a country in a certain year.
- Figure out the tendency of certain disease to decide if it needs to take actions.
- Figure out the death rate of certain disease is decreased or not if some actions have been taken.
- Compare the death rates and the tendency of diseases of two countries to figure out whether a actions is effective or not.

## 4. Data

The data is collected from WHO (World Health Organization).

<http://apps.who.int/gho/data/view.main.ghe300-CHN?lang=en>

## 5. Data Processing

The Data of JSON format will be grabbed from the website above. There are 193 countries, 15 diseases with death rates, three age groups (0~27 days, 1~59 months and 0~4 years)and 14 years from 2000 to 2013.

We delete the age group of 0~4 years since the age groups of 0~27 days and 1~59 months contain this age group. Beside, the age group of new born is a susceptible period.

We will load all these data when we startup the web page.

## 6. Visualization Design

The main idea is to display the distribution of each disease and make the comparison between countries.

## 6.1 Design I

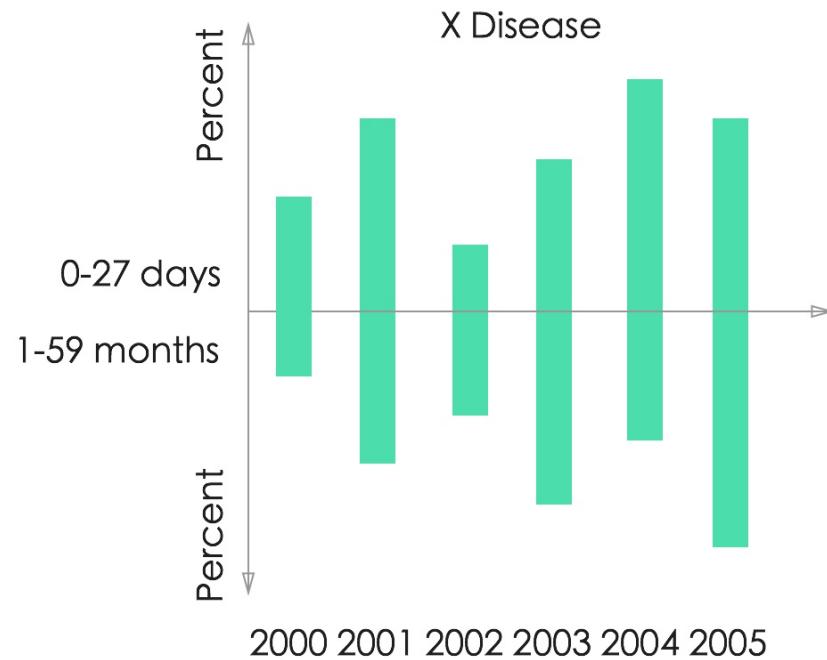


Figure 1

Figure 1 is the distribution of the death rate of a special disease according to different years for one country. There are two age groups in the view: group of 0~27 days and group of 1~59 months.

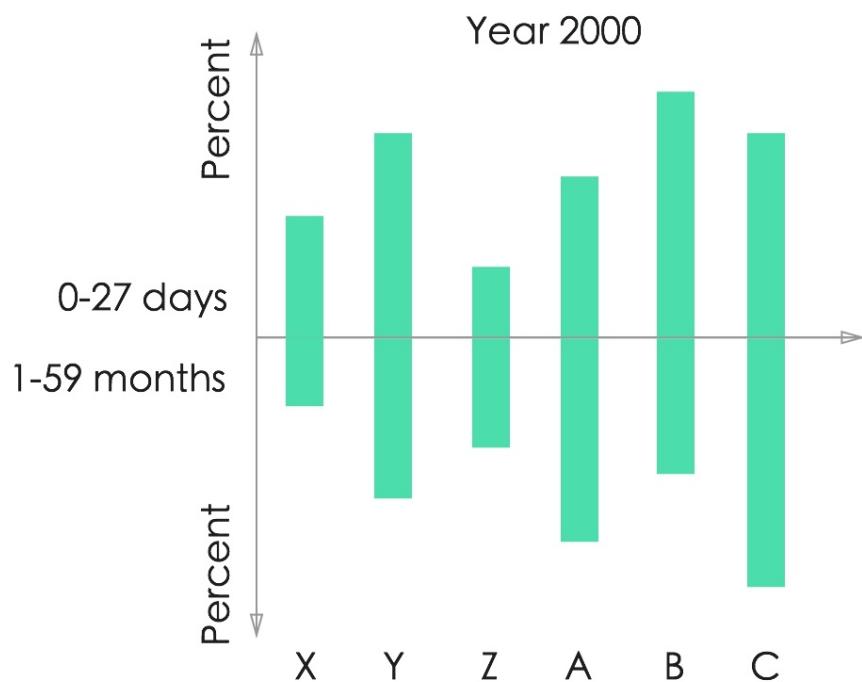


Figure 2

Figure 2 is the distribution of the death rate of all disease in one year for one country. There are two age groups in the view: group of 0~27 days and group of 1~59 months.

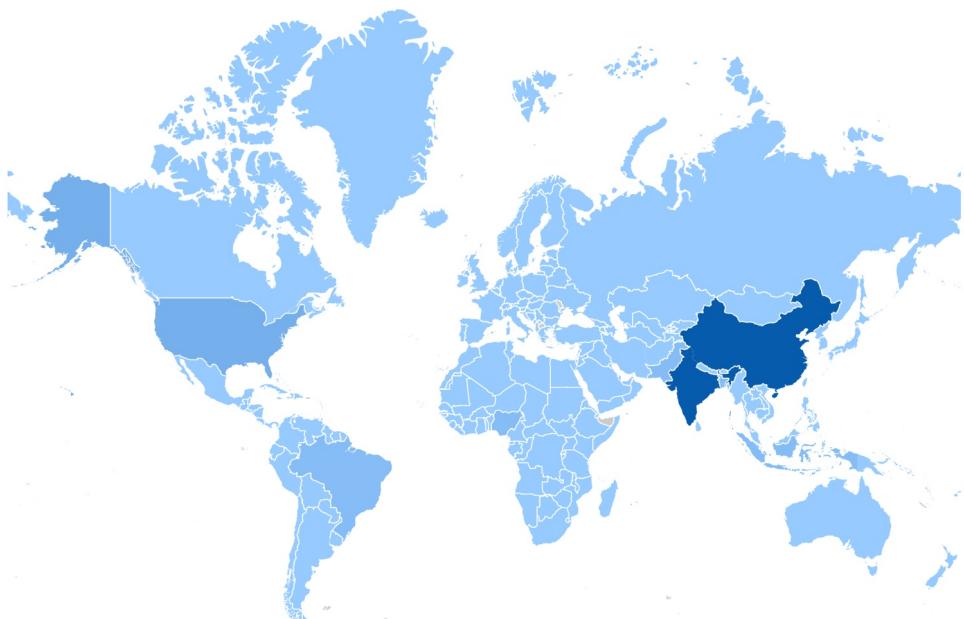


Figure 3

Figure 3 is the world map and the selected country is highlighted. Others would remain the color according to the color scale.

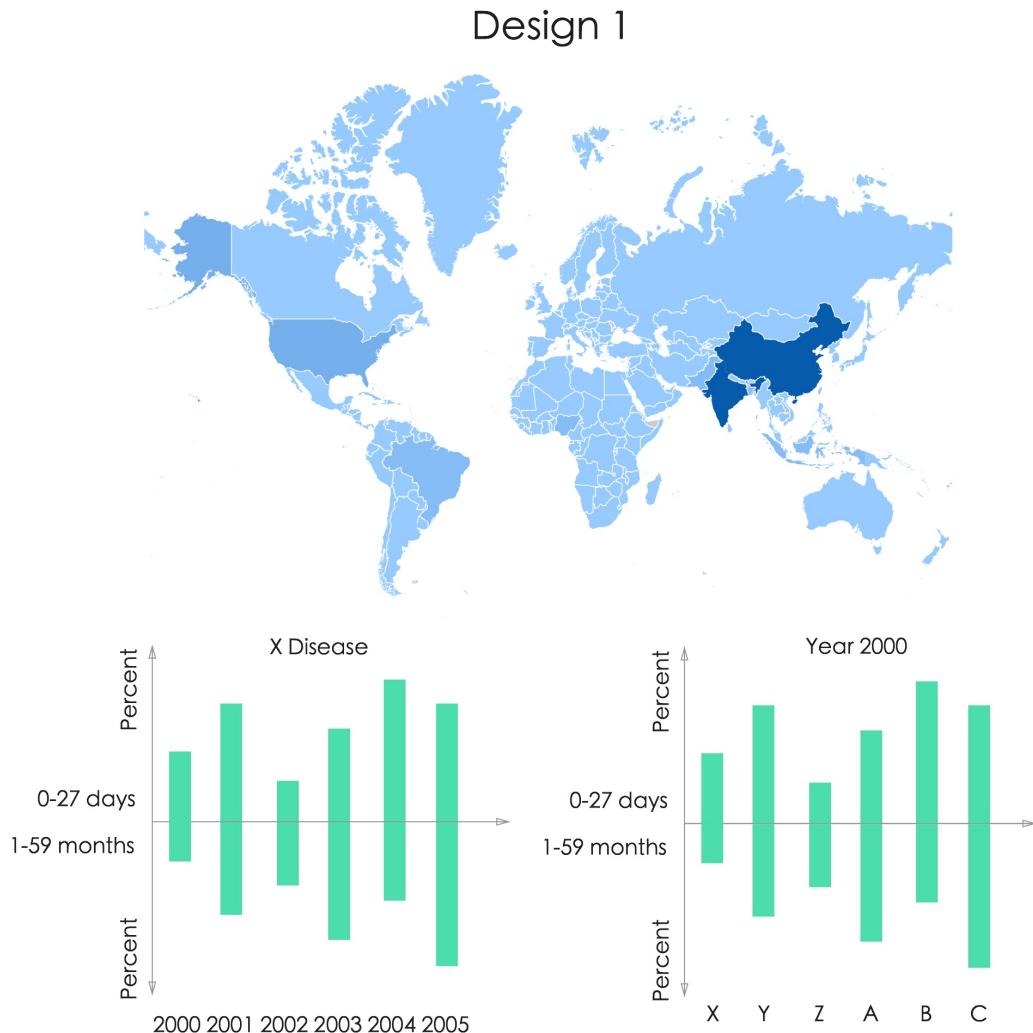


Figure 4

Figure 4 would be display if only one country is selected from the world map. All these three views are interactive. If a country were selected from world map, then the view of figure 1 and figure 2 would be updated according to the data of that country. If a bar were selected from the view of figure 1 or figure 2, then the figure 2 or figure 1 would also be updated according the data of coordinate disease and year.

## Design 1 - Comparison

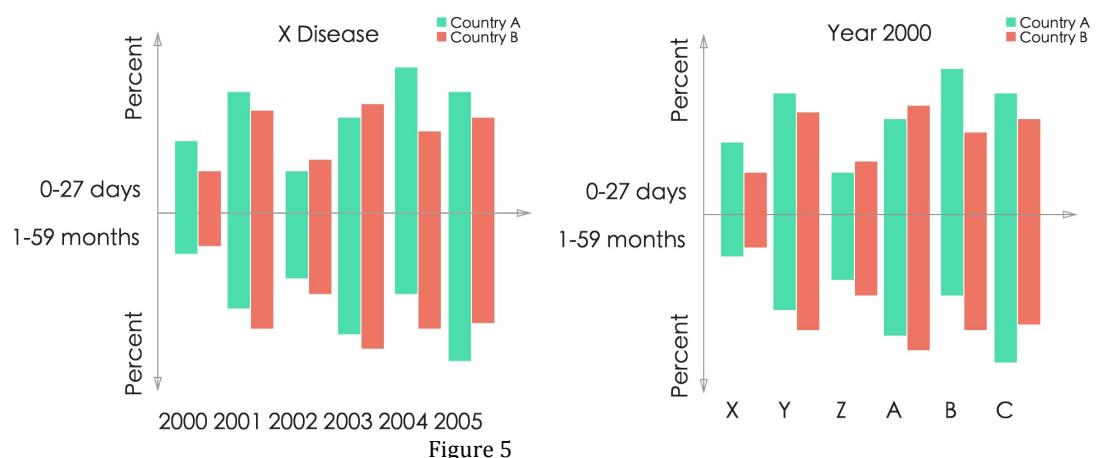
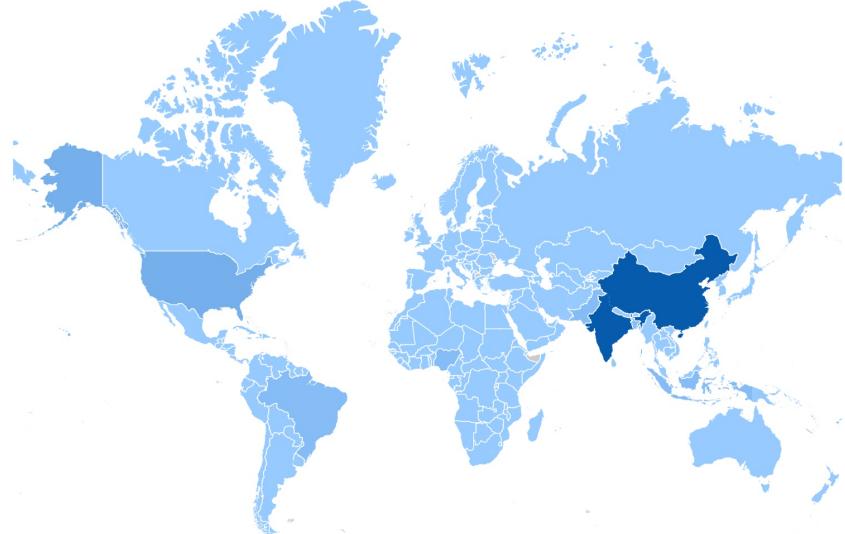


Figure 5

Figure 5 is the comparison of the death rate between two countries. Below is the world map selection policy.

- 1) At most two countries could be selected from the world map.
- 2) There would be a country highlighted as the default country while startup.
- 3) If a country were selected, then single click another country would trigger the comparison.
- 4) If a country were selected, then single click the same country would stay the same.
- 5) If two countries were selected, then single click another country would clean the original two countries and display the data of the new selected country.
- 6) If two countries were selected, then single click a country between the selected two countries, then the clicked country would be removed and display the data of the remain country.

### 6.2 Design II

Design 2

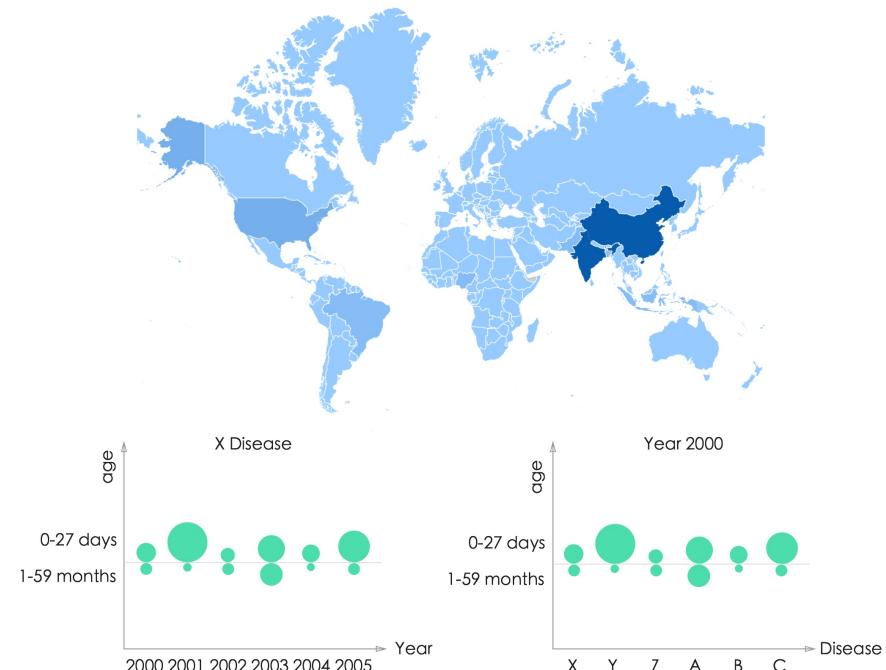


Figure 6

Design 2 - Comparison

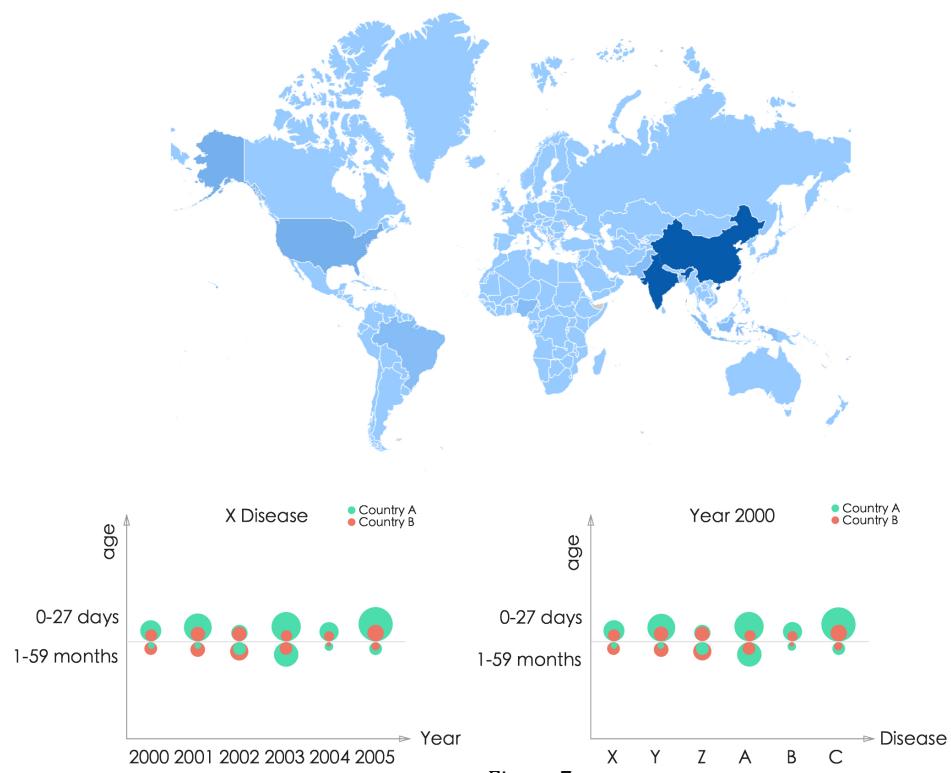


Figure 7

Figure 6 and 7 are the views of Design II. They are a little bit like Design I, but we use the circles to display the death rate instead of the bar charts. Because the circles can represent the data more clearly while overlapping.

### 6.3 Design III

## Design 3

- 0-27 days
- 1-59 months

year:  

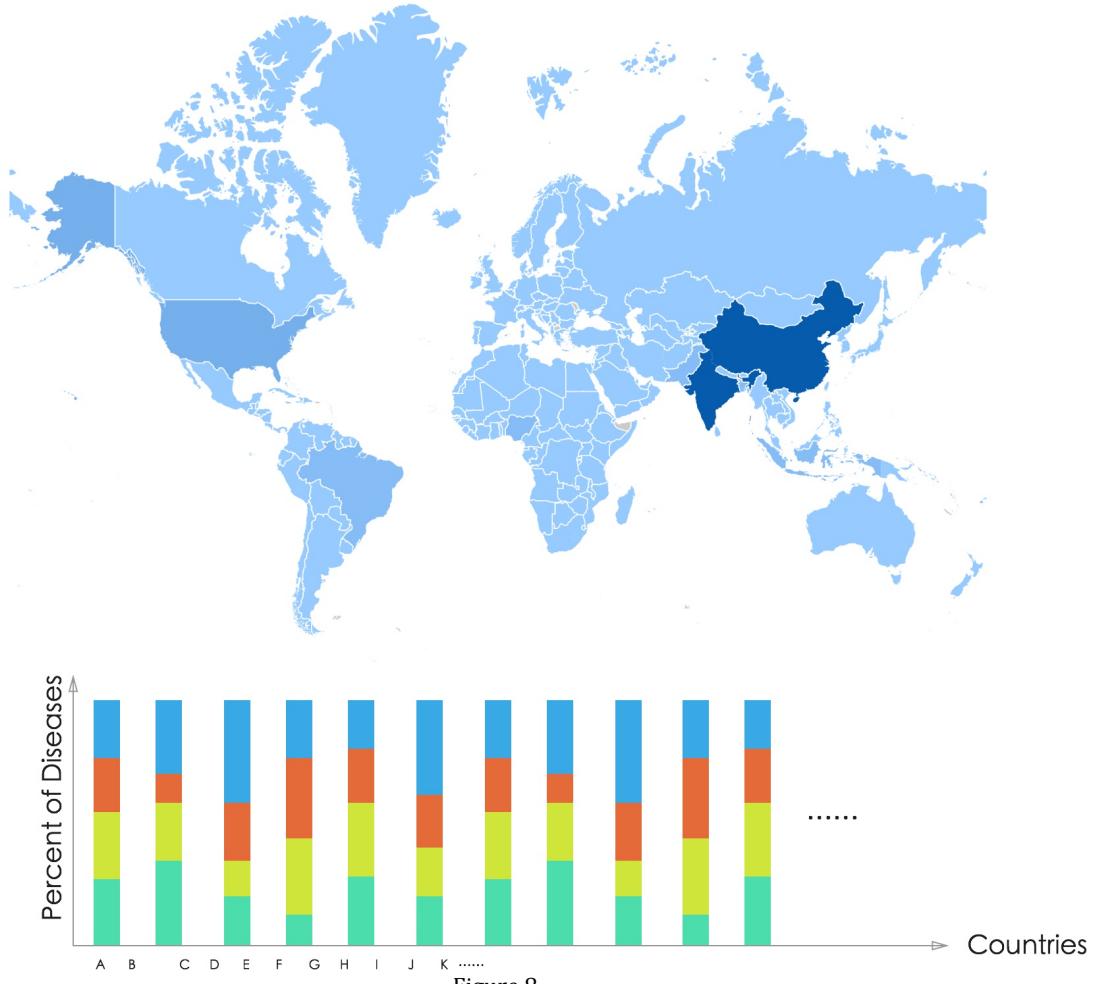


Figure 8

Figure 8 is the startup view of the Design III. Countries would be the X-Axis as the different countries in the world map and the different colors in each bar stand for different death rate for each disease.

The age group and year would be select from the menu on the top left and top right of the web page.

## Design 3

When click some country on map

- 0-27 days
- 1-59 months

year:

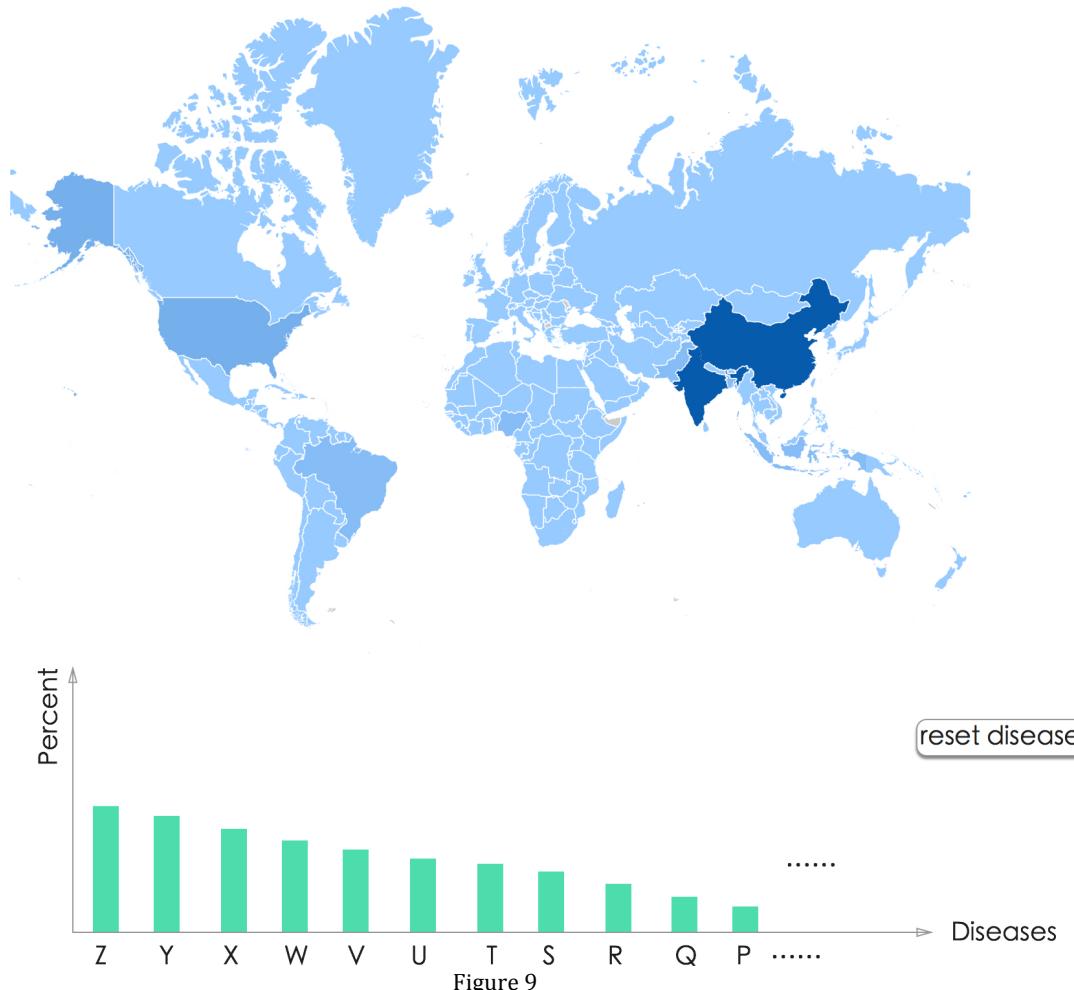


Figure 9 would come out when we click the country from the world map. The diseases would be the X-Axis.

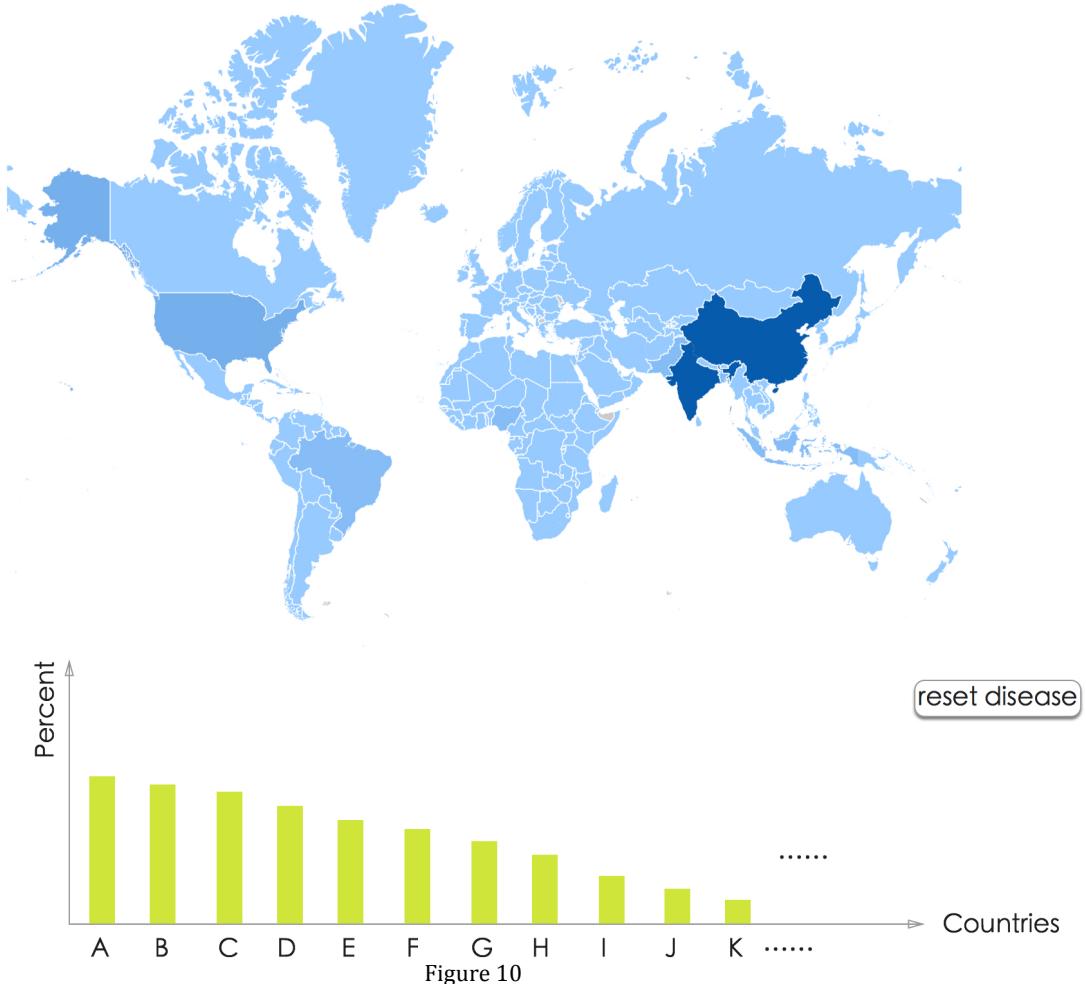
If we click the “reset disease” button, then figure 8 would come out.

## Design 3

When click some specific disease on bar chart

- 0-27 days
- 1-59 months

year: 2001 ▾



Like figure 9, Figure 10 would come out when we click a rectangle, which stands for a certain disease. The countries would be the X-Axis.

If we click the “reset disease” button, then figure 8 would come out.

### Final decision

Among the three designs, we would like to choose design II, since it could both represent the data comparison and the interaction among the views clearly.

## 7. Must-Have Features

1. Implement the distribution of the death rate for each disease in one year, either a single country or a comparison of two countries.
2. Implement the distribution of the death rate of one disease in each year, either a single country or a comparison of two countries.
3. Implement the distribution of the death rate of one disease in the world map with different color with color scale.
4. Implement the zoom in/out and drag of the world map.

5. Implement the mouse over tooltip.
6. Implement the interactions among the views.

## **8. Optional Features**

- Implement animation of procedure of the comparison.
- Implement the slider function of 7.1 and 7.2.
- Implement 3D world map.
- Support the comparison of more than 2 countries.

## **9. Project Schedule**

### **Week 10**

Data prepare & refine

### **Week 11**

Software architecture design

Module division

### **Week 12**

Coding I: implement 7.1

Coding II: implement 7.2

### **Week 13**

Coding III: implement 7.3

Coding IV: implement 7.4

### **Week 14**

Coding V: implement 7.5

Coding VI: implement optional features

Interactive the views

### **Week 15**

Integration

Test & Debug

Documentation

## **10. Reference**

[1][http://apps.who.int/gho/indicatorregistry/App\\_Main/view\\_indicator.aspx?iid=89](http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=89)