

### **HW 3: Design Analysis of Visualization**

1. The audience for this particular visualization appears to be just the general population – specifically perhaps younger people who are more likely to read the online site Wired.
2. Some questions that this visualization answers are:
  - a) Which of infectious diseases/birth problems, injuries, and noncommunicable diseases causes the most deaths per year?
  - b) What are the leading causes of death within those categories?
  - c) By what percentage has each cause of death increased/decreased annually from 2005 to 2010?
3. This visualization represents the the number of annual deaths and their causes as they fall into the categories of diseases/birth problems, injuries, and noncommunicable diseases. It also portrays any annual percentage increase or decrease in the number of deaths for each cause from 2005 to 2010.
4. Color saturation (channel) encodes the annual percentage of change between 2005 and 2010. Volume (mark) encodes the relative number of deaths due to a given cause. Containment (mark) encodes both the larger categories of causes of death (i.e. diseases/birth problems, injuries, and noncommunicable diseases), but is also used to encode the relative number of people who have died due to cancer within the noncommunicable diseases category. Finally, color scheme (channel) encodes which

category (of diseases/birth problems, injuries, and noncommunicable diseases) a given cause fits under.

5. Color is used both to delineate which category (of diseases/birth problems, injuries, and noncommunicable diseases) a given cause of death fits under, while color saturation denotes the annual percentage of change between 2005 and 2010 in deaths. This could be an issue for colorblind people – since greens and reds are used to denote injuries and noncommunicable diseases, respectively, it could be hard to determine where one category ends and where the other begins. It can also be hard to determine whether or not the annual percentage of change is positive (increase) or negative (decrease) without closely looking at the key at the bottom – since the color itself doesn't change drastically, it can be hard to distinguish the difference between a change of 0% to -1% vs. a change of 0% to +1%.
6. It would appear that this visualization violates Tufte's design principles of graphical integrity, data to ink ratio, chart junk, and the lie factor. Because of the 3D graphical display, certain parts of the graph appear to be larger relative to other parts – for instance, it looks as though the injuries category is much bigger than it might be in reality. The visualization also violates chart junk a little bit by including the little blurb labels connected to certain sub-categories. Although these blurbs give interesting information, they are not especially necessary in conveying the information the visualization does. On a more general note, the blurb by Wired claims that this visualization portrays “the gloval cost of early mortality,” but fails to really define “early.” It notes that malaria kills many children and, as such, removes more potential human years of life, while strokes afflict mostly older people and so does

not as severely detract from total human life years. For this reason, perhaps the image does not necessarily reflect causes of “untimely” death, but more causes of death in general.