Title: Mortality in Barcelona

Introduction:

Using a dataset containing data from Mortality in Barcelona from years 2001 to 2011 (6589 rows):

Data organized according to the following columns:

- Years from 2001 to 2011 (Year)
- The given Cause of Death (CauseOfDeath)
- Number of deaths by age group: from 0 to 14 years old (N01_14), from 15 to 44 (N15_44), from 45 to 74 (N45_44), more than 75 years old (N75_XX), and from all ages (TOTAL)
- Rate of number of deaths within the amount of population in Barcelona, corresponding to the same age groups (TX01_14, TX15_44, TX45_74, TX75_XX, TXTOTAL)
- Confidence Interval (IC95)
- Comparative Mortality Ratio (RMC)
- Percent of number of deaths within the Cause of death (PCTTOTAL)
- Standardized mortality rate balanced with the population of Barcelona in the year 1996 (TSTDTOTAL)

Displaying the Mortality in Barcelona:

Perform a visualization of data from two perspectives: evolution of mortality in Barcelona showing all years, according to District and Sex values selected in the sidebar panel combo boxes; mortality in Barcelona per Cause of death, according to Year, District and Sex selected values in the sidebar panel combo boxes (calculate and display also mean of Comparative Mortality Ratio).

Explanation of Evolutive data Panel 1

The Graph displays the evolution of standardized rates per year in Barcelona starting from year 2001 to 2011, and according to the selected District and Sex on the sidebar panel combo boxes.

The Table shows per each year (rows), the following data from Barcelona, according to the selected District and Sex on the sidebar panel combo boxes; by columns:

1. **The given year (YEAR)**
2. **Number of deaths by age group: from 0 to 14 years old (N01_14), from 15 to 44 (N15_44), from 45 to 74 (N45_44), ,more than 75 years old (N75_XX), and from all ages (TOTAL)**

3. **Rate of number of deaths within the amount of population in Barcelona, corresponding to the same age groups (TX01_14,TX15_44,TX45_74,TX75_XX,TXTOTAL)**
4. **Confidence Interval (IC95)**
5. **Comparative Mortality Ratio (RMC)**
6. **Standardized mortality rate ponderated with the population of Barcelona in the year 1996 (TSTDTOTAL)**

Explanation of Death Cause Panel 2

The Graph displays an histogram or frequency distribution of values for Comparative Mortality Ratio (RMC), in Barcelona, according to the selected Year, District and Sex on the sidebar panel combo boxes. It also depicts in a red line the mean value for Comparative Mortality Ratio.

The Table shows pear each main Cause of Death Group (17 groups and TOTAL in rows), the following data from Barcelona, according to the selected Year, District and Sex on the sidebar panel combo boxes; by columns:

1. **The given Cause of Death(CauseOfDeath)**
2. **Confidence Interval (IC95)**
3. **Comparative Mortality Ratio (RMC)**
4. **Percent of number of deaths within the Cause of death (PCTTOTAL)**
5. **Rate of number of deaths within the amount of population in Barcelona (TXOTAL)**
6. **Standardized mortality rate ponderated with the population of Barcelona in the year 1996 (TSTDTOTAL)**

Methods:

Data Collection

For our analysis we used the data coming from our Business Intelligence system that uses data from our Information Systems (Data warehouse). The excel file used in this analysis containing Mortality data of Barcelona is an extraction of a resulting indicator from our Business Intelligence solution.

Exploratory Analysis

Examining tables and plots of the observed data performed exploratory analysis. Subsets of data and calculation of mean of Comparative Mortality Ratio are obtained according to Year, District, Sex selected values in the sidebar panel combo boxes.

Results:

Mean of Comparative Mortality Ratio is obtained according to Year, District, Sex selected values in the sidebar panel combo boxes. The resulting mean is displayed in a red line inside a histogram of frequencies of values for the Comparative Mortality Ratio.

R code:

```
meanrmc <-mean(dades$RMC, na.rm = TRUE)
meanrmcrounded<- round(meanrmc,2)
```

Conclusions:

Standardized rates of Mortality in Barcelona have been decreasing smoothly from 2001 to 2009. In 2009 seems to be an inflection point resulting in a significant increase for 2010, although in 2011 went down again to similar values of the 2009.

Shiny offers a really powerful and flexible platform for data visualization. Our data warehouse and Business Intelligence system generates files in excel which can be loaded to R and visualized interactively using shiny on shinyapps.io.

References

1. Wikipedia "Cause of Death" Page. URL: http://en.wikipedia.org/wiki/Cause_of_death. Accessed 22/6/2014.
2. Wikipedia "Rate of Number of Death" Page. URL: http://en.wikipedia.org/wiki/Mortality_rate. Accessed 22/6/2014.