FIT5147: Data exploration and visualisation

TP2 2020

Quiz 1 Sample Questions

Multiple choice, one answer:

*Which of the following is true?*

1. *Multivariate data is inconsistent*
2. *A large data set is considered multivariate*
3. *Multivariate data has more than two attributes*
4. *Multivariate data cannot be visualised*

Multiple choice, multiple possible answers:

*A plethora of spatial and visual features can be used to encode multiple data attributes, including … (check all that apply)*

1. *Colour*
2. *Texture*
3. *Shape*
4. *Location*

*The Five Design Sheet Methodology helps formalise the design process. The resulting design sheets* ***do not*** *include the following aspects of the design process: (check all that apply)*

1. *Layout*
2. *Algorithm descriptions*
3. *Quality assurance trial results*
4. *Operations*
5. *Software requirements*

Short answer:

*Examine the following code to display the number of mobile homes in each USA state on a map.*

*#######*

*library(ggmap)*

*library(ggplot2)*

*library(maps)*

*library(mapproj)*

*data <- read.csv("Household-heating-by-State-2008.csv", header=T)*

*names(data)[4] <- "MobileHomes"*

*# group MH by state and calculate mean*

*ag <- aggregate(MobileHomes ~ States, FUN=mean, data=data)*

*# we want the names of the states*

*m.usa <- map\_data("state")*

*df <- data.frame(*

*region = tolower(ag$States),*

*MobileHomes = ag$MobileHomes,*

*stringsAsFactors = F*

*)*

*# plot on map*

*# Create a empty canvas*

*ggplot(df, aes(map\_id = region)) +*

*# draw the grid*

*expand\_limits(x = m.usa$long, y = m.usa$lat) +*

*# draw a US map, fill = MobileHomes means color the map*

*# according to MobileHomes property*

*geom\_map(aes(fill = MobileHomes), map = m.usa) +*

*# fix the ratio of the x and y axises, to match a map*

*coord\_map()*

1. *Why do we need to get* x = m.usa$long*,* y = m.usa$lat *from m.usa rather than from df?*
2. *What is the significance of aes in* geom\_map(aes(fill = MobileHomes), map=m.usa)*?*
3. *The csv data also includes the average household size. Identify at least one visualisation that would allow the mobile homes data and the average household size to be contrasted. Justify your selection.*