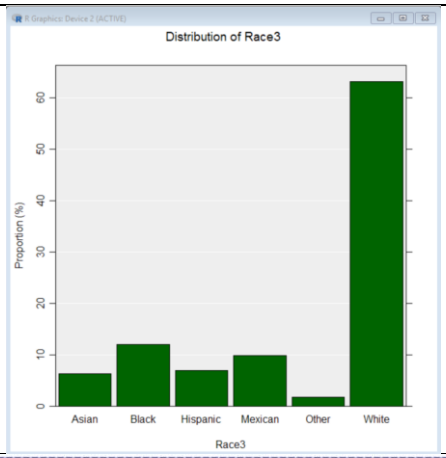
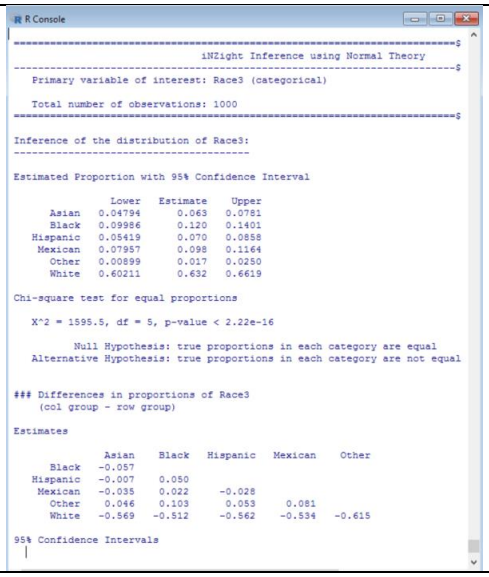
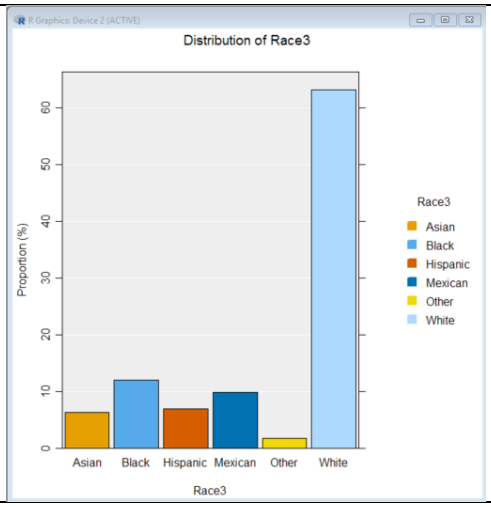
2.5 Exercise: Categorical variables – *R version*

# R code	Output
# Setup library(iNZightPlots) library(FutureLearnData) data(nhanes_1000)	
# Plot the variable Race3 *# Because Race3 is **categorical** we get a **bar chart*** **iNZightPlot(Race3, data=nhanes_1000)**	
# Get a summary for a variable (*Race3*) *# Equiv. of Get Summary in iNZight* **getPlotSummary(Race3, data=nhanes_1000)**	iNZight Summary Primary variable of interest: Race3 (categorical) Total number of observations: 1000 Summary of the distribution of Race3: Asian Black Hispanic Mexican Other White Total Count 63 120 70 98 17 632 1000 Percent 6.3% 12.0% 7.0% 9.8% 1.7% 63.2% 100%
# Equivalent of *Get Inference* in iNZight getPlotSummary(Race3, data=nhanes_1000, **summary.type="inference", inference.type="conf"**)	

 # Colour by a variable (*Race3*) (default colour palette)

iNZightPlot(Race3, data=nhanes_1000, **colby=Race3)**



 # Create a new variable Race3.reord **to re-order** Race3
 # with the categories in frequency order

levels(nhanes_1000$**Race3)**

nhanes_1000**$Race3.reord** =
factor(nhanes_1000**$Race3, levels = c(**"White", "Black", "Mexican", "Hispanic", "Asian", "Other"**))**

iNZightPlot(**Race3.reord**, data=nhanes_1000)

COMMENTARY

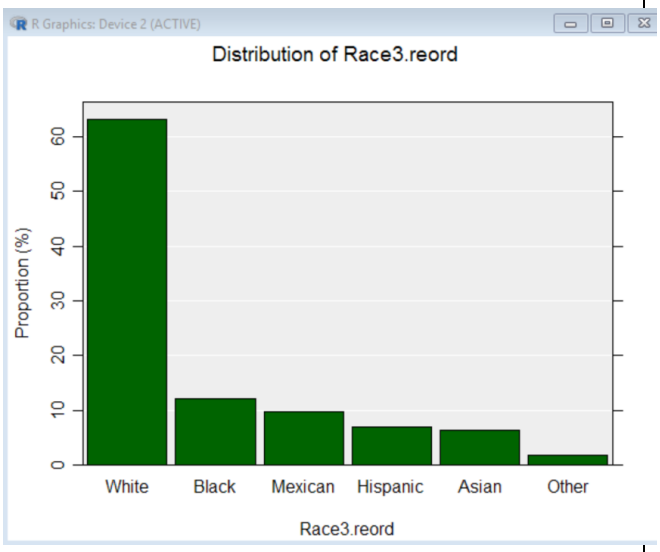
R *calls a* ***categorical*** *variable a "****factor****"*

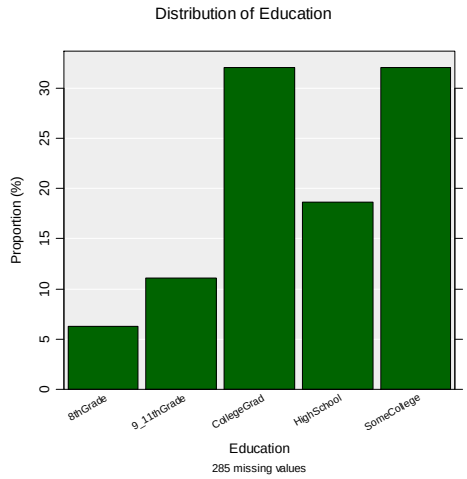
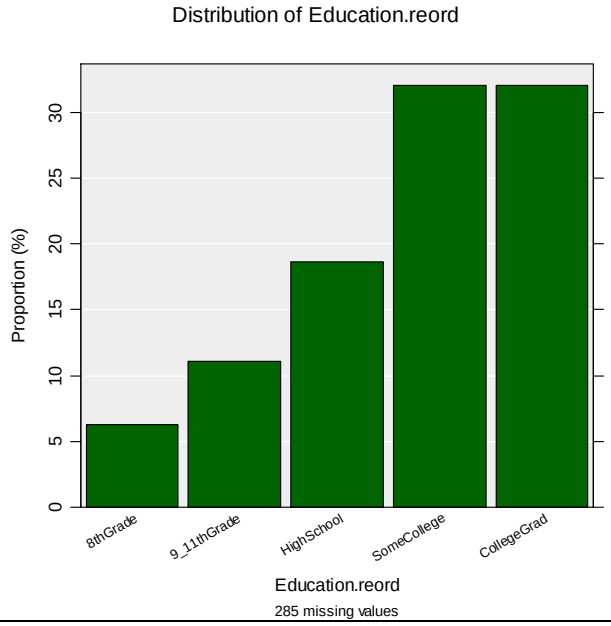
Show me the ***levels*** *of* ***Race3*** *(I can also see in the graph). Output is …*

[1] "Asian" "Black" "Hispanic" "Mexican" "Other" "White"

I can see *what the frequency order should be* ***from the graph.*** *(This can be done generally with code but the code is too complex to do at this stage)*

So I'll make ***Race3.reord*** *from* ***Race3*** *and put them in the order I want. (Getting the number of levels and spelling exactly right is crucial)*



# We'll do this again putting the levels of Education into a sensible order iNZightPlot(Education, data=nhanes_1000)	
levels(nhanes_1000$Education**)**	[1] "8thGrade" "9_11thGrade" "CollegeGrad" "HighSchool" "SomeCollege"
# Create a new variable to re-order Education nhanes_1000$**Education.reord =** **factor(**nhanes_1000$**Education**, **levels =** **c(**"8thGrade","9_11thGrade","HighSchool", "SomeCollege","CollegeGrad"**))** levels(nhanes_1000$**Education.reord)**	[1] "8thGrade" "9_11thGrade" "HighSchool" "SomeCollege" "CollegeGrad"
iNZightPlot(**Education.reord**, data=nhanes_1000)	
iNZightPlot(**Education.reord**, data=nhanes_1000,**colby=Education.reord**) ***# Now change the colour palette** to rainbow colours* iNZightPlot(Education.reord, data=nhanes_1000,colby=Education.reord, **col.fun=rainbow**)	**COMMENTARY** ***Colour by** Education.reord* ***Col.fun** has to be a **colour palette function*** *There are lots of colour palette functions in R, many you have to install other packages to get. rainbow() is a generally available colour palette*

library(colorspace) iNZightPlot(Education.reord, data=nhanes_1000,colby=Education.reord, **col.fun=rainbow_hcl**)	*Using the **rainbow_hcl** colour function from the **colorspace** package*

- **Try repeating the above using other choices for variables and settings**

If you want to try installing some other R packages, in the R menus
Go **Packages** > **Install packages** . You will probably be asked to choose a CRAN mirror site.

Then you will be shown a list of packages to choose from.

Installing the package **viridis** and then loading it [via *library(viridis)*] will give you access to the colour functions: ***viridis***, ***magma***, and ***inferno***

To discuss issues related to this Exercise,

go to **https://gitter.im/iNZightVIT/d2i-R-discussion**

*To be able to post to the list you will have to set up a (free) account on **Github***
https://github.com/login

If your question relates to an Exercise, say which one you are talking about!