R Data Import/Export and Descriptive Statistics

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Imports

- Keyboard Input
- Reading data from text (ASCII)
- Reading data from Excel (csv)
- Importing data saved by other softwares.
  - SPSS
  - SAS
- Accessing data stored in a database management system

Keyboard Input

- Entering data into R with keyboard can be very efficient in some tasks.
- Some useful tips:
  - The combine function c()
  - scan()
  - seq()
  - rep()
  - paste()
  - round()
  - data.frame()
  - edit()
  - fix()

Data sets in R packages

- A lot of R packages have their won data sets and served as a good source of data sets for learning data analysis.
- data()# View the Data sets in basic package ‘datasets’.
- data(CO2)
- View(CO2)
- data(package="car")
- data(Davis,package="car")
- View(Davis)

Reading data from text

- get.wd()
- set.wd()
- read.table()
  - header
  - sep
  - skip
- Data with no variable names
  - colnames()
-

Reading data from excel

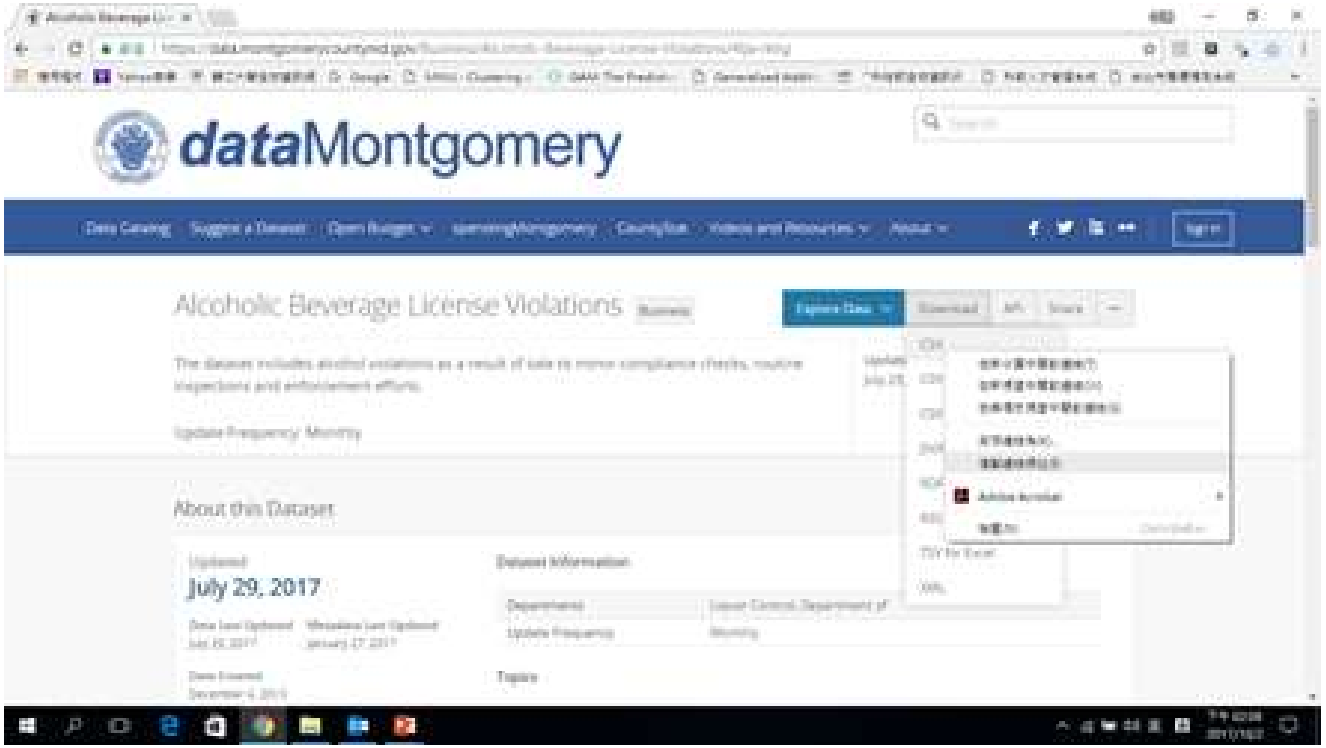
- getwd()
- setwd()
- read.csv()
  - header()
  - skip()
- Data with no variable names
  - colnames()

Data from other Statistical Systems

- RStudio can import data from: Minitab, S-PLUS, SAS, SPSS, Stata, Systat….
- The package foreign provides facilities for files produced by these statistical systems.
- SAS
  - Function read.xport() reads a file in SAS Transport (XPORT) format and return a list of data frames.
  - If SAS is available on your system, function read.ssd can be used to create and run a SAS script that saves a SAS permanent dataset (.ssd or .sas7bdat) in Transport format. It then calls read.xport to read the resulting file.
  - For those without access to SAS but running on Windows, the SAS System Viewer (a zero-cost download) can be used to open SAS datasets and export them to e.g. .csv format.
  - For more details, please see https://cran.r-project.org/doc/manuals/r-release/R-data.html
- Spss
  - Function read.spss() can read files created by the ‘save’ and ‘export’ commands in SPSS. It returns a list with one component for each variable in the saved data set. SPSS variables with value labels are optionally converted to R factors.

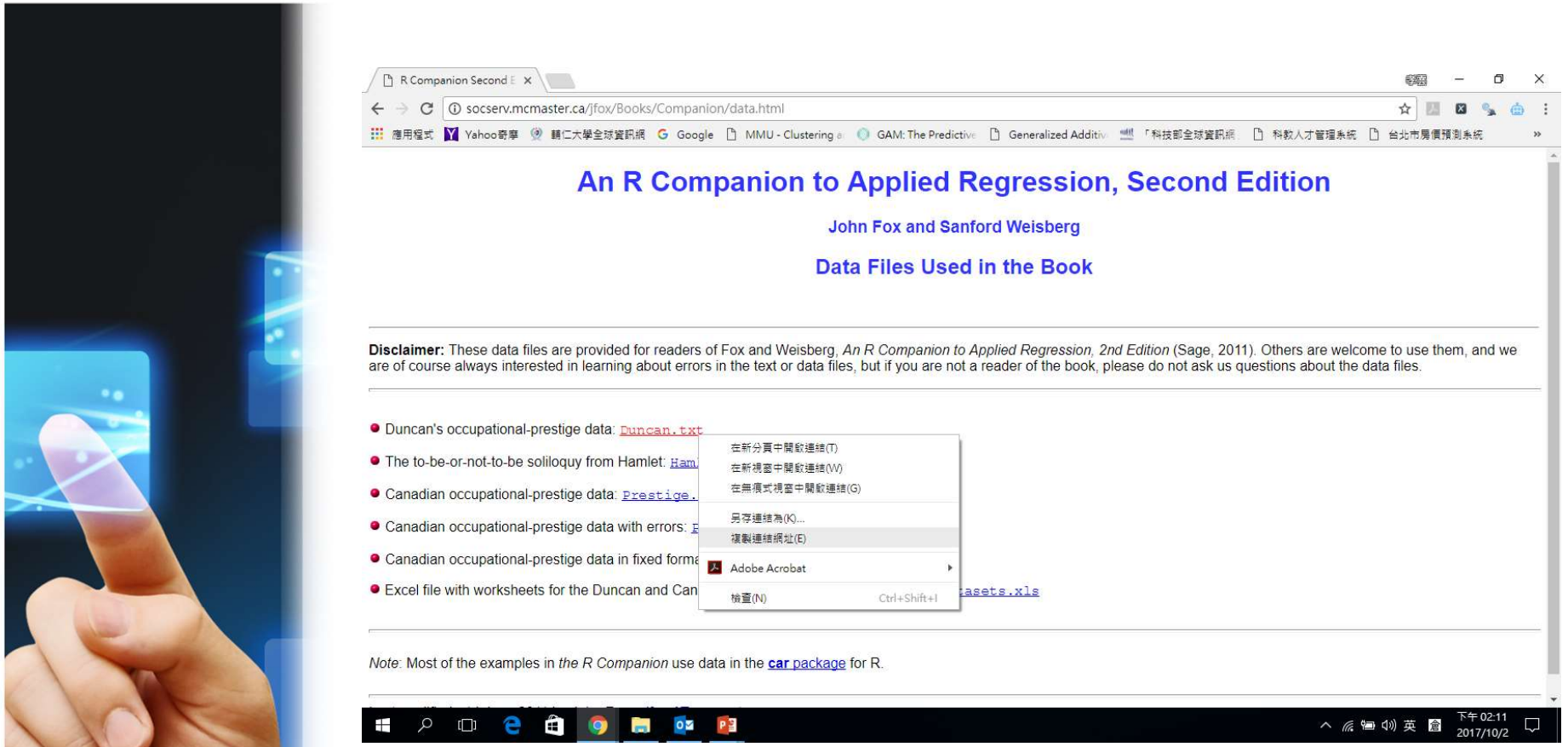
Importing data from web (url)

- Example 1: Go to https://data.montgomerycountymd.gov/
  - Select a file you like.
  - Copy the url
  - Paste the url in read.csv()

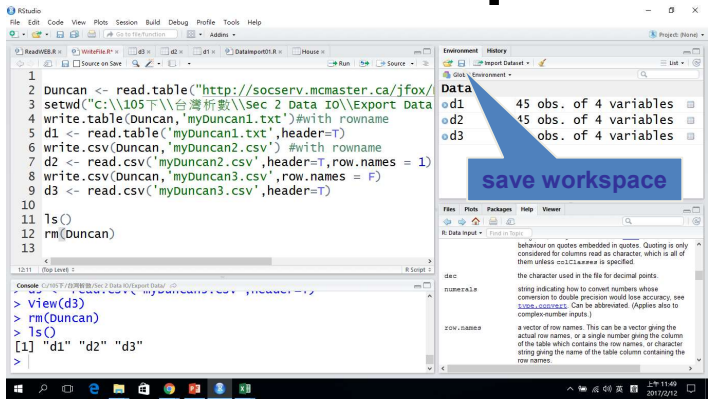

dataMontgomery
Alcoholic Beverage License Violations
About this Dataset
July 29, 2017

Importing data from web (url)

- Example 2: Go to http://socserv.mcmaster.ca/jfox/Books/Companion/data.html
- Select a file you like.
  - Copy the url
  - Paste the url in read.csv()


R Companion Second E
socserv.mcmaster.ca/jfox/Books/Companion/data.html
An R Companion to Applied Regression, Second Edition
John Fox and Sanford Weisberg
Data Files Used in the Book
Disclaimer: These data files are provided for readers of Fox and Weisberg, An R Companion to Applied Regression, 2nd Edition (Sage, 2011). Others are welcome to use them, and we are of course always interested in learning about errors in the text or data files, but if you are not a reader of the book, please do not ask us questions about the data files.
Duncan's occupational-prestige data: Duncan.txt
The to-be-or-not-to-be soliloquy from Hamlet:
Canadian occupational-prestige data: Prestige.
Canadian occupational-prestige data with errors:
Canadian occupational-prestige data in fixed forma
Excel file with worksheets for the Duncan and Can
在新分頁中開啟連結(T)
在新視窗中開啟連結(W)
在無痕式視窗中開啟連結(G)
另存連結為(K)...
複製連結網址(E)
Adobe Acrobat
檢查(N) Ctrl+Shift+I
Note: Most of the examples in the R Companion use data in the car package for R.
下午 02:11
2017/10/2

Export data and workspace



- setwd()
- write.table()
- write.csv
- row.names
- Manage workspace
  - ls() # Lists the objects in the workspace
  - rm() #clearing space
  - search() # Shows the loaded packages
  - library() # Shows the installed packages
  - dir() # show files in the working directory

Missing Data

- is.na() # detect missing element in the dataframe in logical matrix
- rowSums(is.na()) # Number of missing per row
- colSums(is.na()) # Number of missing per column/variable
- complete.cases() #returns a logical vector indicating which cases are complete.
- na.omit() #returns the object with listwise deletion of missing values.

Categorical data: Frequencies

- table() #Count factor variable frequency; K way table
- addmargins() # Adding row/col margins

- prop.table(,1) # Row proportions
- round(prop.table(,1), 2) # Round row prop to 2 digits
- round(100*prop.table(,1), 2) # Round row prop to 2 digits (percents)
- addmargins(round(prop.table(,1), 2),2) # Round row prop to 2 digits

- prop.table(,2) # Column proportions
- round(prop.table(,2), 2) # Round column prop to 2 digits
- round(100*prop.table(,2), 2) # Round column prop to 2 digits (percents)
- addmargins(round(prop.table(,2), 2),1) # Round col prop to 2 digits

- prop.table() # Tototal proportions
- round(prop.table(),2) # Tototal proportions rounded
- round(100*prop.table(),2) # Tototal proportions rounded

Categorical data: Frequencies

- chisq.test() # Do chisq test Ho: no relathionship
- fisher.test() # Do fisher'exact test Ho: no relationship
- assocstats() #association measures and degree of association.

- X2(chi-square) tests for relationships between nominal variables. The null hypothesis (Ho) is that there is no relationship.
- Cramer's V is a measure of association between two nominal variables. It goes from 0 to 1 where 1 indicates strong
- Fisher's exact test is used when there are very few cases in the cells (usually less than 5). It tests the relationship between two nominal variables.
- The null is that variables are independent.

- Source: http://dss.princeton.edu/training/StataTutorial.pdf

Descriptive Statistics For Continuous Variable

- mean() # Mean of all numeric variables
- median() #Median
- var() # Variance
- sd() # Standard deviation
- max() # Max value
- min() # Min value
- range() # Range
- quantile() # Quantiles 25%
- quantile(mydata$SAT, c(.3,.6,.9)) # Customized quantiles
- length(mydata$SAT) # Num of observations when a variable is specify
- length(mydata) # Number of variables when a dataset is specify
- which.max(mydata$SAT) # Determines the location, i.e., index of the (first) minimum or maximum of a numeric vector"
- which.min(mydata$SAT) # From help: "Determines the location, i.e., index of the (first) minimum or maximum of a numeric vector”

Thank you for your attention!

THE END