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# Deducer & RStudio

Mandy Vogel

May 31, 2015

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# Why Deducer?

Deducer is designed to be a free easy-to-use alternative to proprietary data analysis software such as SPSS, JMP, and Minitab. It has a menu system to perform common data manipulation and analysis tasks, and an excel-like spreadsheet in which to view and edit data frames. The goal of the project is two fold.

- Provide an intuitive graphical user interface (GUI) for R, encouraging non-technical users to learn and perform analyses without programming getting in their way.
- Increase the efficiency of expert R users when performing common tasks by replacing hundreds of keystrokes with a few mouse clicks. Also, as much as possible the GUI should not get in their way if they just want to do some programming.
- It may lower the entry threshold.

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# Why Not?

- Deducer is java-dependend and therefore sometimes not stable (although it has been a long time since I had problems, but I work very rarely with the deducer package; maybe it is more stable these days)
- R is designed for text based interactions, the full functionality is not available through menues
- the course will be based on typing the commands but maybe the Deducer GUI helps to overcome your inhibition to use R

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## Installation

 there are instructions how to install at http://www.deducer.org/pmwiki/index.php?n=Main.DownloadingAr

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## Run

- from within R:
  - run R
  - type library(JGR)
  - followed by JGR()
- there is also a script created during the installation; the path is shown when you start Deducer via R (e.g. /R/i686-pc-linux-gnu-library/2.14/JGR/scripts/run

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## Load Packages I



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# Load Packages II

#### choose Package Manager from menu Packages & Data





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## Package Manager

😣 🗏 🗉 Package Manager						
Window	_					
loaded default	Package	Description				
	coda codetools coin colorspace combinat compiler CompQuadFo corpcor cubature DAAG datasets DPU	Output analysis and diagn Code Analysis Tools for R Conditional Inference Proc Color Space Manipulation combinatorics utilities The R Compiler Package Distribution function of qu Efficient Estimation of Cov Adaptive multivariate integ Data Analysis And Graphic The R Datasets Package D Database IstarGoro.				
~ ~	Deducer	Deducer				
	DeducerExtras degreenet Design devtools dichromat digtest diptest directlabels doMC doSNOW dynamicGraph	Additional dialogs and fun. Models for Skewed Count Design Package Tools to make developing Color schemes for dichrom Create cryptographic hash Hartigan's dip test statisti Direct labels for multicolor Foreach parallel adaptor f Goreach parallel adaptor f dynamicGraph				
		Refresh Close				

Now you can choose the packages you want to load for the current session and those you want to load by default each time. The packages Deducer and DeducerExtra should be chosen as default.

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## Package Installer

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Window	
abc abcdeFBA abd abind abn AcceptanceSampling ACCLMA accuracy Ace accepack acer aCGH.Spline ACNE	
actuar	Ŧ
Install Close	2

The package installer can also be found in the menu Packages & Data

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# Additional Deducer Packages

R-Forge offers a central platform for the development of R packages, R-related software and further projects. There are three additional packages for Deducer. You can install them by typing:

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## DeducerRichOutput



#### with DeducerRichOutput

- > one.sample.test(variables=d(Dose),
- + data=x,
- + test=t.test,
- + alternative="two.sided")

#### **One-Sample Test**

#### Method: One Sample t-test

	mean of					
	x	95% CI Lower	95% CI Upper	t	df	p-value
Dose	4.63	4.50	4.75	74.01	131.00	<0.001

#### Notes:

HA: two.sided H0: mean=0

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# data types Deducer can handle

#### The load data menu can handle the following data types

File Type	Extension		
R workspace	*.rda and *.rdata		
R object	*.robj		
Comma seperated	*.csv		
Text file	*.txt		
SPSS	*.sav		
SAS export	*.xpt		
DBase	*.dbf		
Stata	*.dta		
Systat	*.sys and *.syd		
ARFF	*.arff		
Epiinfo	*.rec		
Minitab	*.mtp		
S data dump	*.s3		
Excel	*.xls,*.xlsx		

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# Loading Data

#### It is pretty easy: via the menu File $\rightarrow$ Open Data



😣 🖲 Load Data					
Neuer Ordner Datei löschen					
/media,	TRANSCEND/hove				
Ordner	Dateien				
·/	Body.xls arbeitskopie.xls				
Auswahl: /media/TRANSCEND/hove					
Filter: Excel (*xks*.xksx)					
Abbrechen VOK Set name: x					

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## Open the Data Viewer

The data viewer provides an easy to use, spreadsheet-like environment to view and edit data. Copy and pasting is supported, and is compatible with Excel 20032007, so data can be moved from Excel to R by simply copying it to the data viewer. Contextual menus are used to insert, delete and copy rows and columns.



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# The Data Viewer - Data View

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File Edit Help									
				Data S	et				
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			L	(()					••
Data V	iew Variable View								
	carat cut	color	clarity	depth	table	price	×	y	z
7	0.24 Very Good	1	VVS1	62.3	57.0	336	3.95	3.98	2.41
8	0.26 Very Good	H	SI1	61.9	55.0	337	4.07	4.11	2.5
9	0.22 Fair	E	VS2	65.1	61.0	337	3.87	3.78	2.4
10	0.23 Very Good	н	VS1	59.4	61.0	338	4.0	4.05	2.3
11	0.3 Good	J	SI1	64.0	55.0	339	4.25	4.28	2.7
12	0.23 Ideal	J	VS1	62.8	56.0	340	3.93	3.9	2.4(
13	0.22 Premium	F	SI1	60.4	61.0	342	3.88	3.84	2.3
14	0.31 Ideal	J	SI2	62.2	54.0	344	4.35	4.37	2.7
15	0.2 Premium	E	SI2	60.2	62.0	345	3.79	3.75	2.27
16	0.32 Premium	E	11	60.9	58.0	345	4.38	4.42	2.61
17	0.3 Ideal	1	SI2	62.0	54.0	348	4.31	4.34	2.61
18	0.3 Good	J	SI1	63.4	54.0	351	4.23	4.29	2.1
19	0.3 Good	J	SI1	63.8	56.0	351	4.23	4.26	2.7
20	0.3 Very Good	J	SI1	62.7	59.0	351	4.21	4.27	2.6(
21	0.3 Good	1	SI2	63.3	56.0	351	4.26	4.3	2.7
22	0.23 Very Good	E	VS2	63.8	55.0	352	3.85	3.92	2.41
23	0.23 Very Good	н	VS1	61.0	57.0	353	3.94	3.96	2.4
24	0.31 Very Good	J	SI1	59.4	62.0	353	4.39	4.43	2.6
25	0.31 Very Good	J	SI1	58.1	62.0	353	4.44	4.47	2.5
26	0.23 Very Good	G	VVS2	60.4	58.0	354	3.97	4.01	2.41
27	0.24 Premium	1	VS1	62.5	57.0	355	3.97	3.94	2.41
28	0.3 Very Good	J	VS2	62.2	57.0	357	4.28	4.3	2.6
29	0.23 Very Good	D	VS2	60.5	61.0	357	3.96	3.97	2.4
30	0.23 Very Good	F	VS1	60.9	57.0	357	3.96	3.99	2.41
31	0.23 Very Good	F	VS1	60.0	57.0	402	4.0	4.03	2.4
32	0.23 Very Good	F	VS1	59.8	57.0	402	4.04	4.06	2.41
33	0.23 Very Good	E	VS1	60.7	59.0	402	3.97	4.01	2.4
34	0.23 Very Good	E	VS1	59.5	58.0	402	4.01	4.06	2.4
35	0.23 Very Good	D	VS1	61.9	58.0	402	3 92	3.96	2 4. *
J	10			)					•

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# The Data Viewer - Data View 2

- a right click on the row or column headers
  - allows one to insert, copy and delete columns and rows
  - sort by one column
- you can also edit the data
- in the drop down menu Data Set you can choose the data frame



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# The Data Viewer - Variable View

80	Data Viewer		
	Edit Help		
Data	View Variable View		Data Set (df) diamonds 💌
	Variable	Type	Factor Levels
1	carat	Dou	
2	cut	Eactor	(1) Fair: (2) Good: (3) Very Good: (4) Premi
3	color	Factor	(1) D: (2) E: (3) E: (4) G: (5) H: (6) I: (7) J:
4	clarity	Factor	(1) I1: (2) SI2: (3) SI1: (4) VS2: (5) VS1: (6) VV
5	depth	Dou	
6	table	Dou	
7	price	Inte	
8	×	Dou	
9	У	Dou	
10	z	Dou	
11			

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# The Data Viewer - Variable View 2

In the variable view The variable column represents the variable name. The type column determines the storage type.

- the properties of each variable in the data frame can be edited
- the type column determines the storage type; variables can be stored as
  - Strings (character)
  - Doubles (Numeric)
  - Integers
  - Logicals (yes/no) or
  - Factors
- The levels of Factors are displayed in the 'Factor Levels' column, and can be edited by clicking on the appropriate cell, which brings up the Factor Editor

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# The Data Viewer - Variable View 3

The levels of Factors are displayed in the 'Factor Levels' column, and can be edited by clicking on the appropriate cell, which brings up the Factor Editor.

Variable	Type	Factor Levels
1 Nachname	Character	
2 Vorname	Character	·
3 Geb	Character	
4 V	Factor	(1) m; (2) w;
5 01	Character	
6 U2	Character	
7 alter1	Dout	
8 alter2	Dou 🔍	Factor Editor: V
9 Col7	Dou	
0 bpdgrad1	Dou Leve	vels
1 groesse1	Dou m	
2 groesse2	Dou w	
13 gew1	Dou	
14 gew2	Dou	
15 fvc1	Dou	
16 Fvc2	Dou	
17 fev1	Dou	
18 Fev2	Dou	
19 fev.fvc1	Dou	
20 Fev.fvc2	Dou Cor	ontrasts Ordered
21 mef75.1	Dou	
2 mef75.2	Dou 👩	Capital OK
3 mef50.1	Dou 💟	
24 mef50.2	Dou	
25 mef25.1	Doubte	
26 mef25.2	Double	
27 mmef1	Double	
28 mmef2	Double	
9 11	Double	

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# Frequencies

Frequency tables provide descriptive information for categorical and ordinal variables. They display the number of cases that fall into each category of a specific variable, as well as calculate percentages.

	Analysis	Plots	Extras	Packag				
ļ	Frequen	cies						
	Descript	Descriptives						
1	Conting	ency T	ables					
,	One Sam	nple Te						
•	Two San	nple Te	est					
	K-Sample Test							
	Paired T	est						
I	Correlat	ion						
	Linear Model							
	Logistic	Model						
	Generali	zed Lir	near Moo	del				

😣 🗊 Run Frequencies	
x v Filter: Nachname Vorname Geb	Run Frequencies On:
U1 U2 alter1 alter2 Col7 bodgrad1	
groesse1	Cancel OK

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# Frequencies Output

## With DeducerRichOutput Frequencies

#### riequencies

#### Frequencies (sex)

	Value	# of Cases	96	Cumulative %
1	m	16	42.10	42.10
2	w	22	57.90	100.00

#### Case Summary (sex)

	Valid	Missing	Total	% Missing
1	38.00	0.00	38.00	0.00

#### Frequencies (bpdgrad1)

	Value	# of Cases	96	Cumulative %
1	0	17	44.70	44.70
2	1	21	55.30	100.00

#### Case Summary (bpdgrad1)

	Valid	Missing	Total	% Missing
1	38.00	0.00	38.00	0.00

# Without DeducerRichOutput

\$sex				
		Fre	quencies	
Value # of	Cases	% Cu	mulative %	
1 m	16	42.1	42.1	
2 w	22	57.9	100.0	
		Case	e Summary	
	alid Mis	sing Tota	l	
# of cases	38	0 3	3	

#### \$bpdgrad1

			Freq	uencies	
۷.	alue # of	Cases	% Curr	ulative %	
1	0	17	44.7	44.7	
2	1	21	55.3	100.0	
			Case	Summary	
	V V	alid Mis	sing Total		
# o	f cases	38	0 38		

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# Descriptives

Calculates descriptive statistics for a set of variables. Possibly stratified by another set of variables.

😣 🗊 Descriptives			) 🚺	🖲 🗊 Descriptives		
x r Filter: Vorname Vorname Geb U1 U2 alter1 alter2 Col7 bpdgrad1 gew1 gew2 Fvc1		Descriptives of: groesse1 groesse2 Stratify By Sex		Functions Valid N Minimum 2sth Percentile Mean Medan 7sth Percentile Maximum St. Devlation St. Sevev Kurtosis		Run Descriptives
	Reset	Cancel Continue	1		Reset	Cancel Run

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# **Contingency Tables**

Contingency tables (sometimes called crosstabs) are used to summarize and analyze the joint distribution of two variables, possibly stratified by a third. A table of observation counts will be created for each combination of the variables in the row list and each variable in the column list. If a stratum variable is specified, separate tables are created for each level of the variable.

Analysis	Plots	Extras	Pac
Frequence	ies		
Descripti	ves		
Continge	ncy Tal	oles	
One Sam	ple Tes	t	c
Two Sam	ple Tes	t	
K-Sample	Test		
Paired Te	est		=
Correlati	on		
Linear M	odel		
Logistic N	lodel		
Generaliz	zed Lin	ear Mod	el

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112			
alter1			Statist
alter2			
Col7			
groessel			
groesse2			Reculto
gewl			nesures
gew2		Column	
fvc1		bpdgrad1	
fvc2			
fev1			
fev2	4		
fev.fvcl			
fev.fvc2			
mef75.1			
mef75.2		Charatife De	
mef50.1	E State	Stratily by	
mef50.2			
mef25.1		Subrat	
mef25.2		Subset	
mmef1	*		

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# Contingency Tables - Cells

In addition to observation counts, there are a number of additional cell values that can be displayed.

- 1. Percentages
  - $1.1\,$  Row Percentage in cell out of observations within each row
  - 1.2 Column Percentage in cell out of observations within each column
  - 1.3 Total Percentage in cell
- 2.  $\chi^2$ -test
  - 2.1 Expected The expected count of the cell if there were no relationship between the two variables
  - 2.2 Residuals The observed count minus the expected count.
  - 2.3 Standardized residuals The residuals standardized such that (if the two variables were independent) they have mean 0 and standard deviation 1. These residuals are useful in determining which cells of a contingency table contribute most to a significant  $\chi^2$  test.
  - 2.4 Adjusted residuals These adjust the residuals by the row and column totals.

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# Contingency Tables - Cells

😣 Table Cell Conten	ts
Percentages ☑ Row ☑ Column ☐ Total (1)	Chi-Squared Expected (2) Residuals Standardized Resid Adjusted Residuals
Don't print tab	Cancel OK

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# Contingency Tables - Stats

8 Table Statistics	
Nominal By Nominal	Ordinal By Ordinal
Likelihood	□ Spearman's N
🔄 Fisher's E	Nominal By Ordinal
Cross-Stra	Kruskal-W
Mantel Haen	N Þ¶
N III	
[	Cancel OK

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# Getting R-Studio

RStudio is a free and open source integrated development environment (IDE) for R. You can run it on your desktop (Windows, Mac, or Linux) or even over the web using RStudio Server. Available at http://rstudio.org/ (install R first)

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- data viewer

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# Why RStudio?

- under the hood RStudio is a customized mozilla firefox so it is stable on Windows, Linux, and Mac operating systems
- it is optimized for text based interactions with R
- it provides rich facilities to integrate documentation into analyses (reproducible research), results can be exported to (la)-tex (and further to pdf), html, and even MS Word
- RStudio is highly supported by industry