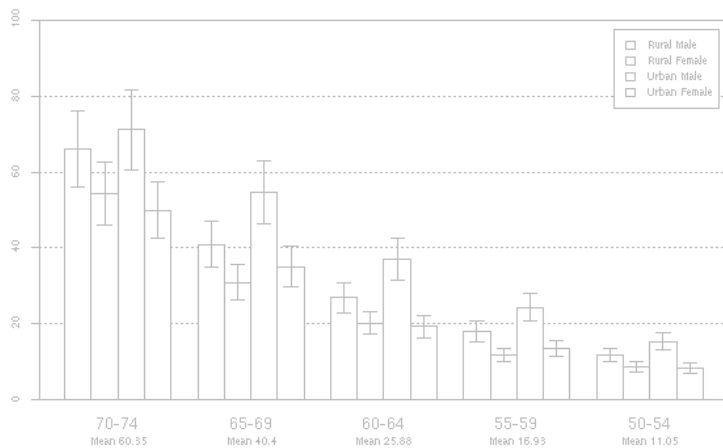


A new task-based GUI for R

UseR! The R User Conference 2011

Sheri Gilley, Principal UI Designer

August 2011





Introduction

- Sheri Gilley, Principal User Interface Designer
- BS in Psychology, Statistics
- MS in Statistics
- 26 years of software experience at SPSS
 - Statistician
 - Techline & Training
 - UI Designer
 - SPSS for Windows
 - What If?, What If? Web
 - Clementine (Modeler)
 - Text Analysis for Surveys, Text Analysis for Clementine (Text Analysis for Modeler)
- Now Principal UI Designer at Revolution Analytics



Vision

- Design a user interface for R **data analysis**
- Easy to use for someone with 1 or more semesters of Statistics courses
 - Expand the use of R to new audiences
 - Task based approach
- While also assisting someone writing R code
 - Write code
 - Ability to view code generated from dialogs
- While allowing someone to add their own dialogs



Architecture

- Web Client UI:
 - Same UI on multiple platforms
 - built on RevoDeployR web services framework
- Server:
 - local machine
 - intranet
 - internet
 - cloud
 - grid (RevoDeployR 2.0 load balancing support)



DEMO

- Design View
 - Design Sketches from Fireworks
 - Webpage from Dreamweaver, simple click events
 - Easy to iterate quickly, just draw a different picture
 - Live Demo (pre-beta)

For Business User

- Easy to use
- Task based dialogs
- Information you need when you need it

The screenshot displays the Revolution Analytics interface. On the left, a navigation pane shows 'Analyses' with 'Categorical Counts' selected. The main window is titled 'dataset' and 'Object name: freq_table'. It features a 'Define' tab for creating a frequency table, with a 'Variables' field containing the error message 'At least one variable required'. Below this are 'Options' for 'Weight' and 'Treatment of missing values', with 'Variable by variable deletion' selected. At the bottom are 'Reset', 'View R Code', 'Preview', and 'Run' buttons. On the right, the 'Workspace Explorer' shows a table of cereal variables: name (77 levels), mfr (7 levels), type (2 levels), calories (50,160), protein (1,6), fat (0,5), and sodium (0.320). Below the table is a histogram of 'cereals\$calories' with a y-axis from 0 to 30 and an x-axis from 60 to 160.

Type	Name	Details
	name	(77 levels)
	mfr	(7 levels)
	type	(2 levels)
	calories	(50,160)
	protein	(1,6)
	fat	(0,5)
	sodium	(0.320)

For R User

- All the power of R available in Script Editor
- View and/or modify code generated from task dialogs

```
linear_model<-lm(inlf ~ nwifeinc + educ + exper + age + kidlt6 + kidge6,  
data=cps, family="binomial")  
summary(glm.model)  
scoreModel(glm.model)
```

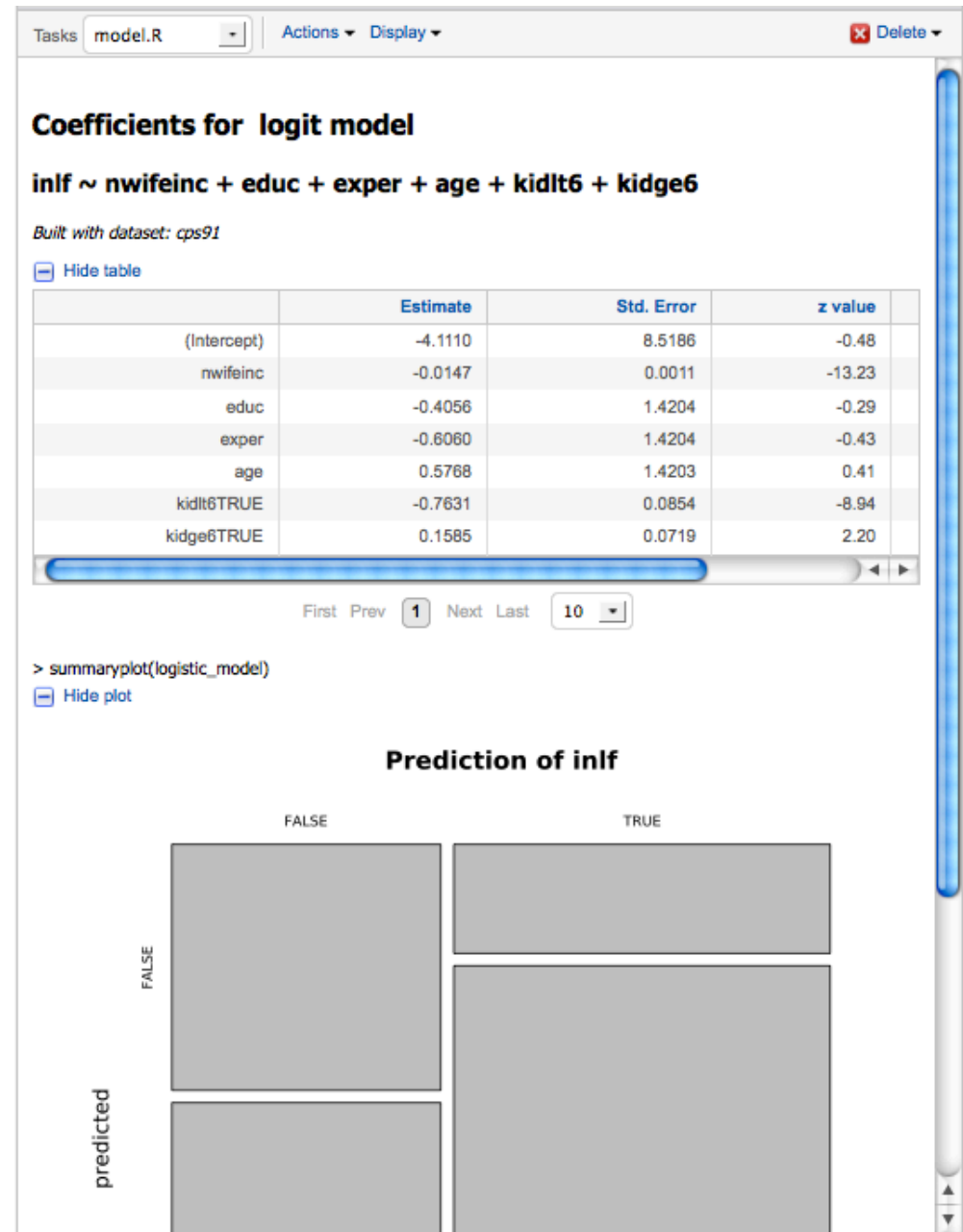
View R Code

The screenshot shows the R Script Editor interface. At the top, there is a 'Go to:' dialog box with 'to.dbl' entered. Below it, several script tabs are visible: 'read.R', 'Script2.R', 'model.R', and 'functions.R'. The main editor area displays R code for a function that converts factors and ordered factors to double. The code is as follows:

```
to_double  
to_double  
to_double<-function(x){  
  factor (unordered or ordered)  
  [(class(x)=="factor") | (class(x)=="ordered")]{  
    #extract the levels as character  
    x<-as.character(levels(x)[x])  
    #now strip out any of the non-numeric parts of the levels  
    x<-gsub('[^0-9.]', '', x)  
    conv<-as.double(x)  
  
    else if (class(x)=="character") {  
      #strip out non-numeric characters  
      x<-gsub('[^0-9.]', '', x)  
      conv<-as.double(x)  
    }  
    else {  
      conv<-as.double(x)  
    }  
  }  
}
```

For Everyone!

- Attractive “human readable” output
- Integration of charts and tables



For Everyone!





- Organize work into projects

Recent Projects

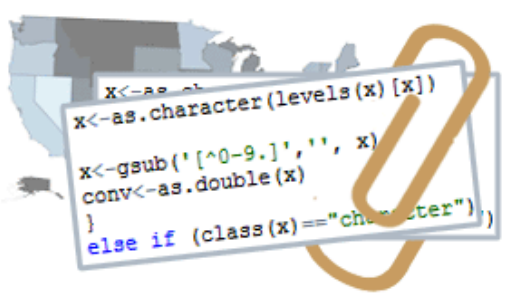
Click a recent project to open it.

Name	Description	Modified Date
CPS1991	Econometric Analysis of Cross Section and Panel Data	2011-07-31T19:23:23Z
funwithR		2011-07-31T19:22:28Z
xdf		2011-07-28T20:35:42Z
Breakfast Cereals	77 breakfast cereals	2011-07-26T01:50:41Z
CPS91b	Econometric Analysis of Cross Section and Panel Data	2011-07-22T17:28:40Z
CustomerSurvey	Survey from Jan 2011	2011-07-22T15:53:25Z
Admissions	Admissions at UCLA	2011-07-21T21:37:05Z
Audite	Predicting IRS audits	2011-07-21T20:12:09Z

Getting Started

-  Create a new project
-  Open an existing project
-  Manage your projects
-  View online help

Projects



```
x<-as.character(levels(x)[x])
x<-as.character(levels(x)[x])
x<-gsub('[^0-9.]', '', x)
conv<-as.double(x)
}
else if (class(x)=="character")
```

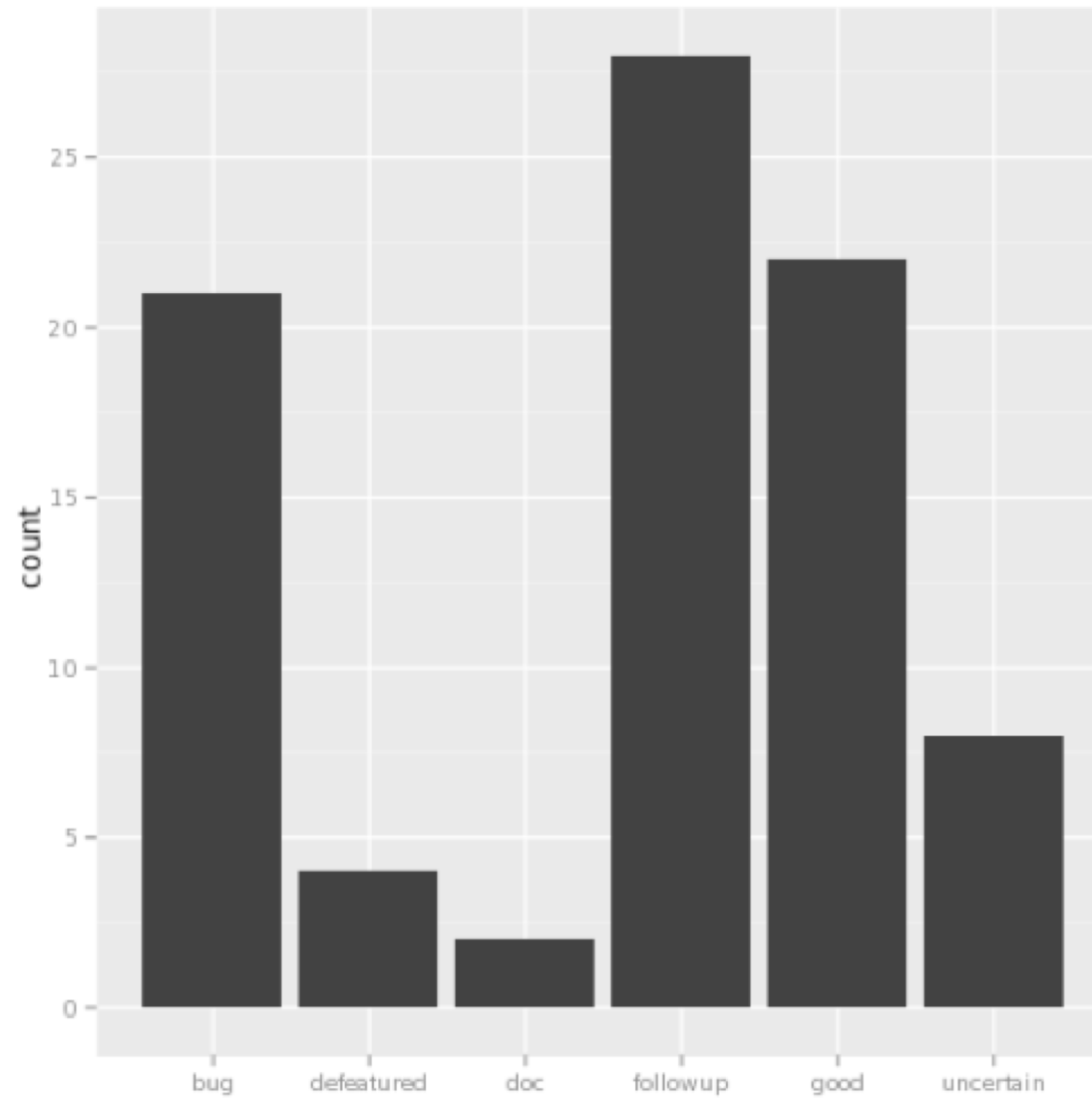
Stay organized with Projects in RevogUI.
All your work – scripts, results, history, and more – are saved as Projects.



Usability Testing

- User Centered Design: Design for Personas / Test with People
- Tied to Milestone Release
- Methodology
 - Online meeting (Go To Meeting)
 - Camtasia for recording
- Subject can be at any location

Results





Usability Results

- Changes based on Usability Testing
 - scrollbars instead of paging in Explorer
 - Better navigation in Results Pane
 - SVG instead of PNG plots in Results Pane
 - New main toolbar layout
 - Terminology changes
 - Image changes



GUI Advisory Group

- Revolution's GUI Advisory Group
 - usability subjects
 - 1-1 demos
 - specific questions about a design
 - survey of feature desirability
 - early information about beta program
- How to join?
 - see me after this talk
 - email me: sheri@revolutionanalytics.com



Roadmap

- Beta by end of 2011, release in 2012
- First release: Basic Statistics
- Next release: Data Manipulation tasks
- Continue to expand stats
- Continue to expand extensibility