

rapport: a report templating system in *R*

Literate programming with global options and local arguments

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Some custom R packages for reporting

R report templates with inputs

1 rapporttools

Helper functions to be used inside of textual reports.

2 pander

Turning R objects into markdown.

3 rapport

What is “pander”?

A collection of helper functions to print markdown syntax

```
> ?pandoc.(footnote|header|horizontal.rule|image|link|p)(.return)?  
> ?pandoc.(emphasis|strikeout|strong|verbatim)(.return)?
```

```
> pandoc.strong('foobar')  
**foobar**
```

```
> pandoc.strong.return('foobar')  
[1] "***foobar**"
```

```
> pandoc.header('foobar', level = 2)
```

```
## foobar
```

```
> pandoc.header('foobar', style = 'setext')
```

```
foobar  
=====
```

What is “pander”?

Collection of helper functions to map R objects to markdown

```
> ?pandoc.(list|table)(.return)?
```

```
> pandoc.list(list('foo', list('bar')))
```

```
* foo
  * bar
```

```
> pandoc.table(head(iris, 2), split.table = Inf)
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3	1.4	0.2	setosa

What is “pander”?

Collection of helper functions to map R objects to various markdown languages

```
> pandoc.table(head(iris, 2), split.table = Inf, style = 'rmarkdown')
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3	1.4	0.2	setosa

```
> pandoc.table(head(iris, 2), split.table = Inf, style = 'simple')
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3	1.4	0.2	setosa

What is “pander”?

Collection of helper functions to map R objects to various markdown languages

```
> iris$Species <- 'foos and bars'; names(iris) <- gsub('.', ' ', names(iris))
> pandoc.table(head(iris, 4), split.table = Inf, style = 'grid',
+ split.cells = 5, justify = 'left')
```

Sepal Length	Sepal Width	Petal Length	Petal Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	foos and bars

What is “pander”?

S3 method to map R objects to markdown

```
> ?pander(.return)?
```

```
> methods(pander)
```

```
[1] pander.anova*      pander.aov*        pander.cast_df*    pander.character*
[5] pander.data.frame* pander.default*    pander.density*    pander.evals*
[9] pander.factor*     pander.glm*        pander.htest*      pander.image*
[13] pander.list*       pander.lm*         pander.logical*    pander.matrix*
[17] pander.NULL*       pander.numeric*    pander.option      pander.POSIXct*
[21] pander.POSIXt*     pander.prcomp*     pander.rapport*    pander.table*
```

Non-visible functions are asterisked

```
> pander(head(iris, 1), split.table = Inf)
```

```
-----
Sepal.Length  Sepal.Width  Petal.Length  Petal.Width  Species
-----
          5.1           3.5           1.4           0.2      setosa
-----
```

What is “pander”?

S3 method to map R objects to markdown

```
> pander(letters[1:7])
```

```
_a_, _b_, _c_, _d_, _e_, _f_ and _g_
```

```
> pander(ks.test(runif(50), runif(50)))
```

```
-----  
Test statistic   P value   Alternative hypothesis  
-----
```

```
0.18           _0.3959_           two-sided  
-----
```

Table: Two-sample Kolmogorov-Smirnov test: ‘runif(50)’ and ‘runif(50)’

```
> pander(chisq.test(table(mtcars$am, mtcars$gear)))
```

```
-----  
Test statistic   df           P value  
-----
```

```
20.94           2   _2.831e-05_ * * *  
-----
```

Table: Pearson's Chi-squared test: ‘table(mtcars\$am, mtcars\$gear)’

What is “pander”?

S3 method to map R objects to markdown

```
> pander(lm(mtcars$wt ~ mtcars$hp), summary = TRUE)
```

	Estimate	Std. Error	t value	Pr(> t)
mtcars\$hp	0.009401	0.00196	4.796	4.146e-05
(Intercept)	1.838	0.3165	5.808	2.389e-06

Observations	Residual Std. Error	\$R^2\$	Adjusted \$R^2\$
32	0.7483	0.4339	0.4151

Table: Fitting linear model: mtcars\$wt ~ mtcars\$hp

What is “pander”?

S3 method to map multiple R objects to markdown

```
> mtable123 <- mtable("Model 1" = lm(hp ~ wt, mtcars),  
+                      "Model 2" = lm(qsec ~ hp, mtcars),  
+                      "Model 3" = lm(qsec ~ wt, mtcars),  
+                      summary.stats = c("R-squared", "F", "p", "N"))  
  
> pander(mtable123)
```

```
-----  
      &nbsp;      Model 1   Model 2   Model 3  
-----  
  
**(Intercept)**   -1.821    20.556*** 18.875***  
                  (32.325)   (0.542)   (1.103)  
  
**wt**            46.160***                -0.319  
                  (9.625)                (0.328)  
  
**hp**                        -0.018***  
                              (0.003)  
  
**R-squared**      0.434      0.502      0.031  
  
**F**              22.999      30.190      0.945
```

What is “pander”?

S3 method to map R objects to pretty formatted markdown

```
> panderoptions('table.split.table', Inf)
> panderoptions('table.style', 'grid')
> emphasize.cells(which(iris > 1.3, arr.ind = TRUE))
> pander(iris)
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	*3.5*	*1.4*	0.2	setosa
4.9	*3*	*1.4*	0.2	setosa
4.7	*3.2*	1.3	0.2	setosa
4.6	*3.1*	*1.5*	0.2	setosa
5	*3.6*	*1.4*	0.2	setosa

What does “pander” do inside of “rapport”?

A tool for literate programming that automatically transforms R objects into markdown

```
# A quick analysis on mtcars
```

```
<% for (v in names(mtcars)) { %>
```

The mean of `<%= v %>` is `<%= mean(mtcars[, v]) %>` and the standard deviation is `<%= sd(mtcars[, v]) %>`. Let us also check the frequency table:

```
<%= table(mtcars[, v]) %>
```

```
## Tables are boring!
```

```
<%=
```

```
set.caption(paste("Histogram of", v))
```

```
hist(mtcars[, v], xlab = v, col = sample(colors(), 1), main = "")
```

```
%>
```

```
<% } %>
```

What does “pander” do inside of “rapport”?

Pandoc.brew: markdown results

```
# A quick analysis on mtcars
```

The mean of am is `_0.4062_` and the standard deviation is `_0.499_`. Let us also check the frequency table:

```
-----  
  0    1  
---  ---  
19   13  
-----
```

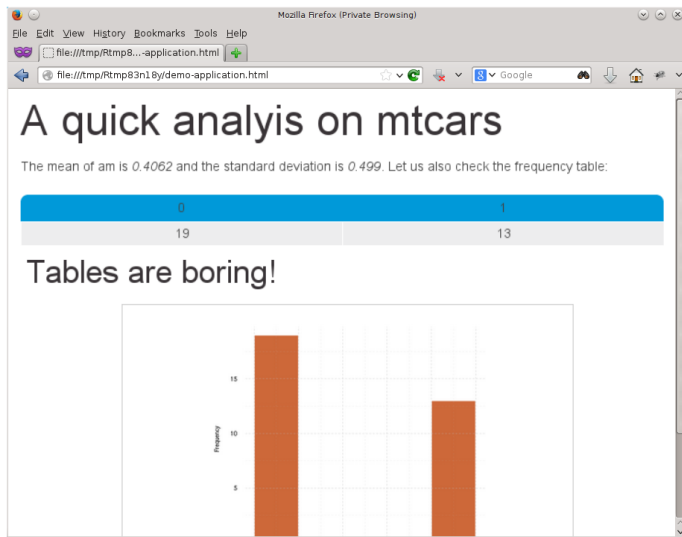
```
## Tables are boring!
```

```
![Histogram of am] (/tmp/RtmphL0K2Q/plots/f2457fb575.png)
```

```
...
```

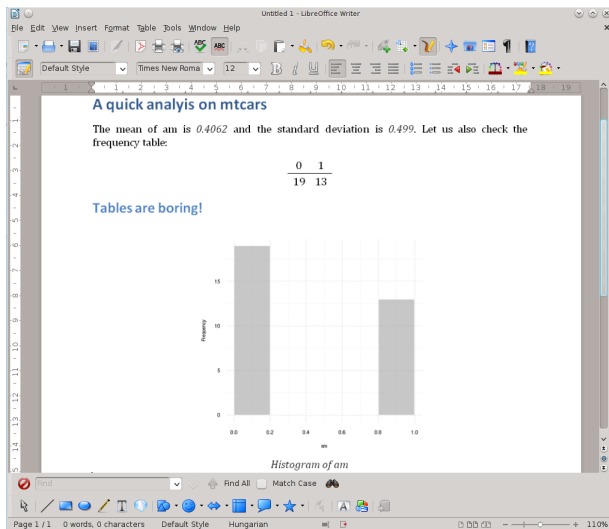
What does “pander” do inside of “rapport”?

Pandoc.brew: calling Pandoc to convert the results to HTML



What does “pander” do inside of “rapport”?

Pandoc.brew: calling Pandoc to convert the results to MS docx



“rapport” overview

The overall structure of a reusable report template

```
<!--head
meta:
  title: ...
  author: ...
  description: ...
  packages:
    ...
inputs:
- name: ...
  class: ...
head-->

<% for (...) { %>

## Subtitle with <%= inline code chunk %>

<%= table(...) %>

<% } %>
```


“rapport” demo

Header: meta information on the reporting template and input(s) specification

```
<!--head
meta:
  title: Rapport demo
  author: daroczig
  description: This is POC demo on the usage of rapport templates
  packages:
    - ggplot2
    - pander
inputs:
- name: v
  label: Variable to analyse
  required: yes
  class: numeric
  length:
    min: 1.0
    max: 1.0
- name: color
  label: Color of the histogram
  standalone: yes
  value: red
  class: character
head-->
```

“rapport” demo

Body: normal text with brew-style code chunks

```
# A quick analysis on <%= v.name %>
```

The mean of <%= v.name %> is <%= mean(v) %> and the standard deviation is <%= sd(v) %>. Let us also check the frequency table:

```
<%= table(v) %>
```

```
## Tables are boring!
```

```
<%=  
set.caption(paste('Histogram of', v.name))  
hist(v, xlab = v, col = color, main = '')  
%>
```

“rapport” demo

```
> rapport('rapport-demo', data = mtcars, v = 'am')
```

```
# A quick analysis on _am_
```

The mean of am is `_0.4062_` and the standard deviation is `_0.499_`. Let us also check the frequency table:

```
-----  
  0    1  
--- ---  
19   13  
-----
```

```
## Tables are boring!
```

```
![Histogram of am] (/tmp/RtmphL0K2Q/plots/f2457fb575.png)
```

Analysing the results of a dialect survey with Google Maps and ordinary English language

20 / 23

A bit more complex demo

Analysing the results of a dialect survey with Google Maps and ordinary English language

Summary

The **most popular category** in the United Kingdom was `<<pop>>` for `<<Pop or soda?>>` chosen by *four tenth* of the respondents.

And the most important differences between the countries can be summarised as:

- it seems, that *two tenth* of Brittish people disagree with `<<other>>` that is low comparing to e.g. Scottish people
- eventually, *less then one tenth* of Brittish people tends to dislike the answer `<<soft drink>>` that is low compared to lets say Northern Irish people
- it seems, that *one half* of people living in Northern Ireland tends to like the answer `<<soft drink>>` that is high comparing to e.g. Welsh citizens
- it seems, that *two tenth* of Scottish people tends to dislike the answer `<<pop>>` that is low compared to the average
- it seems, that *five tenth* of Scottish people love the answer `<<other>>` that is high compared to lets say Brittish people

<http://blog.rapporter.net/2013/07/uk-dialect-maps.html>

Rapporter packages

All released under AGPL, designed to be deployed in web applications

pander:	A Pandoc's markdown writer in R
rapport:	A report templating system with dynamic inputs
rapporttools:	Helpers functions
sandboxR:	Filtering "malicious" R calls

GitHub 

GitHub 

GitHub 

GitHub

Further documentation:

- <http://rapport-package.info/>
- <http://rapporter.github.io/pander/>
- <http://hackme.rapporter.net>
- <http://blog.rapporter.net>

Q & A: daroczig@rapporter.net

Why pander?

Custom features

- brew loops and conditional parts of a report just like with brew,
- capturing plots and images with automatically applied theme,
- render all R objects automatically in Pandoc's markdown,
- recording all warning/error messages **plus** the raw R objects along with anything printed to stdout and the printed results,
- custom caching mechanism to disk or RAM with auto-dependency,
- convert to HTML/pdf/odt/docx at one go,
- no chunk options (only workaround),
- building reports also in interactive session with an R5 reference class.

<http://rapporter.github.io/pander/#brew-to-pandoc>