



Merging data

Jeffrey Leek
Johns Hopkins Bloomberg School of Public Health

Peer review experiment data

The screenshot shows a web browser window displaying a PLOS ONE article. The browser's address bar shows the URL www.plosone.org/article/info:doi/10.1371/journal.pone.0026895. The page features a banner at the top with the text "Simplify your research with automatic and continuous dosing" and an image of medical syringes. Below the banner is the PLOS ONE logo and navigation links: "Articles", "For Authors", "About Us", and a search bar. A table of statistics is displayed, showing 6,497 views, 2 citations, 61 academic bookmarks, and 108 social shares. The article title is "Cooperation between Referees and Authors Increases Peer Review Accuracy" by Jeffrey T. Leek, Margaret A. Taub, and Fernando J. Pineda. The article is categorized as "RESEARCH ARTICLE" and is marked as "OPEN ACCESS" and "PEER-REVIEWED". Below the title, there are tabs for "Article", "About the Authors", "Metrics", "Comments", and "Related Content". The "Article" tab is selected, showing a preview of the article content, including a flowchart and several line graphs. To the right of the article preview are buttons for "Download", "Print", and "Share". Below these buttons is a "Comments" section with a link to "Media Coverage of This Article" and a post by "PLoS_ONE_Group".

PLOS ONE: Cooperation between X

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RESEARCH ARTICLE

Cooperation between Referees and Authors Increases Peer Review Accuracy

Jeffrey T. Leek, Margaret A. Taub, Fernando J. Pineda

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Peer review data

```
if(!file.exists("./data")){dir.create("./data")}
fileUrl1 = "https://dl.dropboxusercontent.com/u/7710864/data/reviews-apr29.csv"
fileUrl2 = "https://dl.dropboxusercontent.com/u/7710864/data/solutions-apr29.csv"
download.file(fileUrl1,destfile="./data/reviews.csv",method="curl")
download.file(fileUrl2,destfile="./data/solutions.csv",method="curl")
reviews = read.csv("./data/reviews.csv"); solutions <- read.csv("./data/solutions.csv")
head(reviews,2)
```

	id	solution_id	reviewer_id	start	stop	time_left	accept
1	1	3	27	1304095698	1304095758	1754	1
2	2	4	22	1304095188	1304095206	2306	1

```
head(solutions,2)
```

	id	problem_id	subject_id	start	stop	time_left	answer
1	1	156	29	1304095119	1304095169	2343	B
2	2	269	25	1304095119	1304095183	2329	C

Merging data - merge()

- Merges data frames
- Important parameters: *x,y,by,by.x,by.y,all*

```
names(reviews)
```

```
[1] "id"           "solution_id" "reviewer_id" "start"       "stop"       "time_left"  
[7] "accept"
```

```
names(solutions)
```

```
[1] "id"           "problem_id" "subject_id" "start"       "stop"       "time_left" "answer"
```

Merging data - merge()

```
mergedData = merge(reviews,solutions,by.x="solution_id",by.y="id",all=TRUE)
head(mergedData)
```

	solution_id	id	reviewer_id	start.x	stop.x	time_left.x	accept	problem_id	subject_id	
1		1	4	26	1304095267	1304095423	2089	1	156	29
2		2	6	29	1304095471	1304095513	1999	1	269	25
3		3	1	27	1304095698	1304095758	1754	1	34	22
4		4	2	22	1304095188	1304095206	2306	1	19	23
5		5	3	28	1304095276	1304095320	2192	1	605	26
6		6	16	22	1304095303	1304095471	2041	1	384	27

	start.y	stop.y	time_left.y	answer
1	1304095119	1304095169	2343	B
2	1304095119	1304095183	2329	C
3	1304095127	1304095146	2366	C
4	1304095127	1304095150	2362	D
5	1304095127	1304095167	2345	A
6	1304095131	1304095270	2242	C

Default - merge all common column names

```
intersect(names(solutions),names(reviews))
```

```
[1] "id"      "start"   "stop"    "time_left"
```

```
mergedData2 = merge(reviews,solutions,all=TRUE)  
head(mergedData2)
```

	id	start	stop	time_left	solution_id	reviewer_id	accept	problem_id	subject_id	answer
1	1	1304095119	1304095169	2343	NA	NA	NA	156	29	B
2	1	1304095698	1304095758	1754	3	27	1	NA	NA	<NA>
3	2	1304095119	1304095183	2329	NA	NA	NA	269	25	C
4	2	1304095188	1304095206	2306	4	22	1	NA	NA	<NA>
5	3	1304095127	1304095146	2366	NA	NA	NA	34	22	C
6	3	1304095276	1304095320	2192	5	28	1	NA	NA	<NA>

Using join in the plyr package

Faster, but less full featured - defaults to left join, see help file for more

```
df1 = data.frame(id=sample(1:10),x=rnorm(10))  
df2 = data.frame(id=sample(1:10),y=rnorm(10))  
arrange(join(df1,df2),id)
```

	id	x	y
1	1	0.2514	0.2286
2	2	0.1048	0.8395
3	3	-0.1230	-1.1165
4	4	1.5057	-0.1121
5	5	-0.2505	1.2124
6	6	0.4699	-1.6038
7	7	0.4627	-0.8060
8	8	-1.2629	-1.2848
9	9	-0.9258	-0.8276
10	10	2.8065	0.5794

If you have multiple data frames

```
df1 = data.frame(id=sample(1:10),x=rnorm(10))  
df2 = data.frame(id=sample(1:10),y=rnorm(10))  
df3 = data.frame(id=sample(1:10),z=rnorm(10))  
dfList = list(df1,df2,df3)  
join_all(dfList)
```

	id	x	y	z
1	6	0.39093	-0.16670	0.56523
2	1	-1.90467	0.43811	-0.37449
3	7	-1.48798	-0.85497	-0.69209
4	10	-2.59440	0.39591	-0.36134
5	3	-0.08539	0.08053	1.01247
6	4	-1.63165	-0.13158	0.21927
7	5	-0.50594	0.24256	-0.44003
8	9	-0.85062	-2.08066	-0.96950
9	2	-0.63767	-0.10069	0.09002
10	8	1.20439	1.29138	-0.88586

More on merging data

- The quick R data merging page - <http://www.statmethods.net/management/merging.html>
- plyr information - <http://plyr.had.co.nz/>
- Types of joins - [http://en.wikipedia.org/wiki/Join_\(SQL\)](http://en.wikipedia.org/wiki/Join_(SQL))