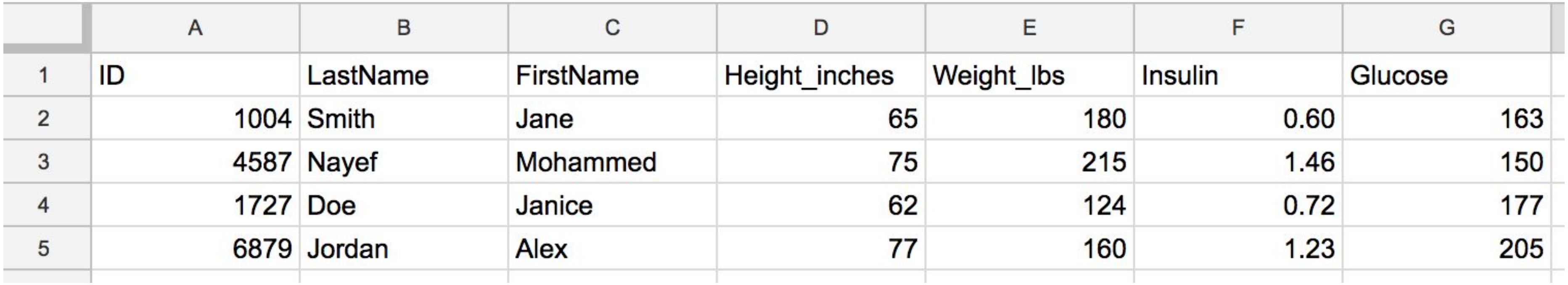
Reshaping Data

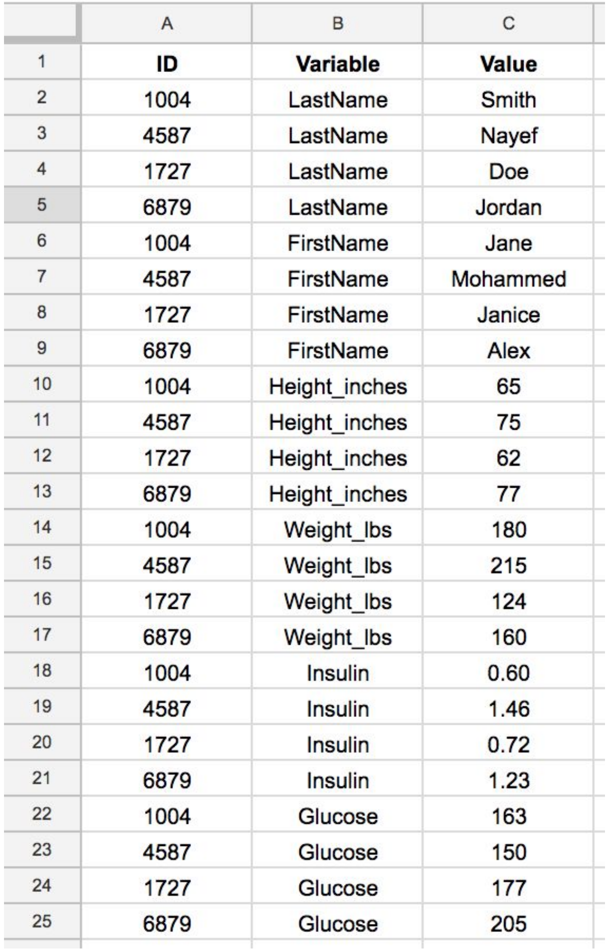
Data Cleaning

wide data



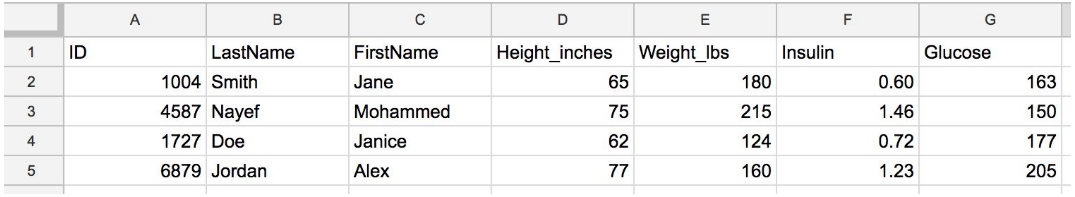
	A	B	C	D	E	F	G
1	ID	LastName	FirstName	Height_inches	Weight_lbs	Insulin	Glucose
2	1004	Smith	Jane	65	180	0.60	163
3	4587	Nayef	Mohammed	75	215	1.46	150
4	1727	Doe	Janice	62	124	0.72	177
5	6879	Jordan	Alex	77	160	1.23	205

long data



	A	B	C
1	**ID**	**Variable**	**Value**
2	1004	LastName	Smith
3	4587	LastName	Nayef
4	1727	LastName	Doe
5	6879	LastName	Jordan
6	1004	FirstName	Jane
7	4587	FirstName	Mohammed
8	1727	FirstName	Janice
9	6879	FirstName	Alex
10	1004	Height_inches	65
11	4587	Height_inches	75
12	1727	Height_inches	62
13	6879	Height_inches	77
14	1004	Weight_lbs	180
15	4587	Weight_lbs	215
16	1727	Weight_lbs	124
17	6879	Weight_lbs	160
18	1004	Insulin	0.60
19	4587	Insulin	1.46
20	1727	Insulin	0.72
21	6879	Insulin	1.23
22	1004	Glucose	163
23	4587	Glucose	150
24	1727	Glucose	177
25	6879	Glucose	205

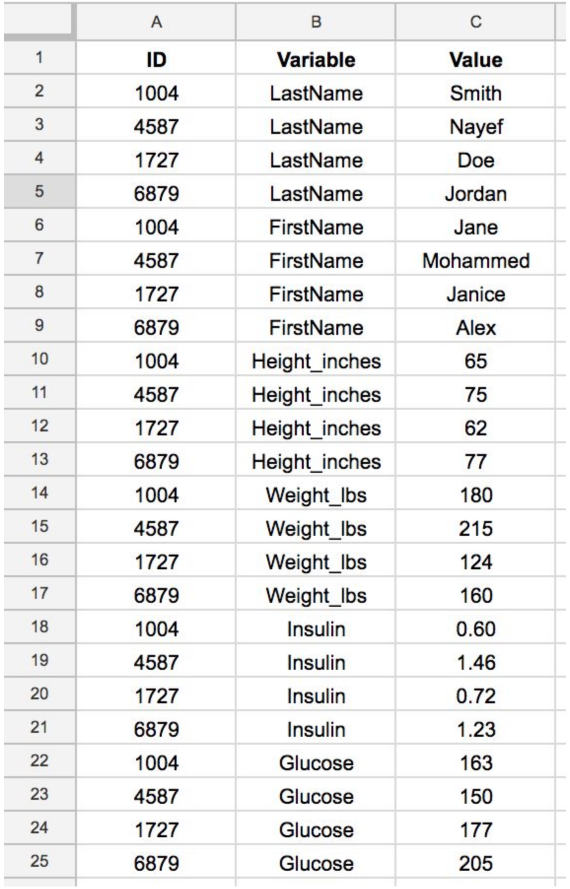
wide data



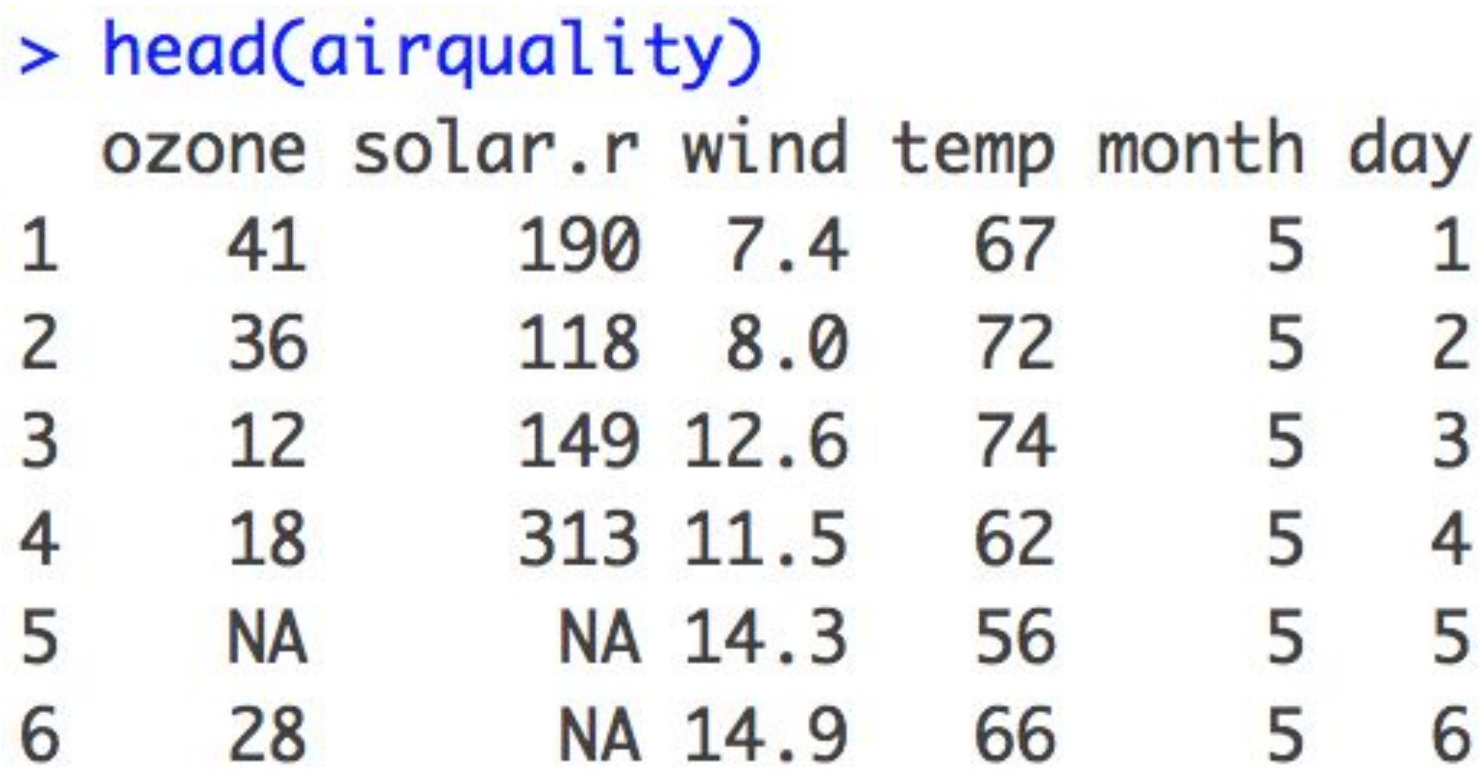
	A	B	C	D	E	F	G
1	ID	LastName	FirstName	Height_inches	Weight_lbs	Insulin	Glucose
2	1004	Smith	Jane	65	180	0.60	163
3	4587	Nayef	Mohammed	75	215	1.46	150
4	1727	Doe	Janice	62	124	0.72	177
5	6879	Jordan	Alex	77	160	1.23	205

reshaping data

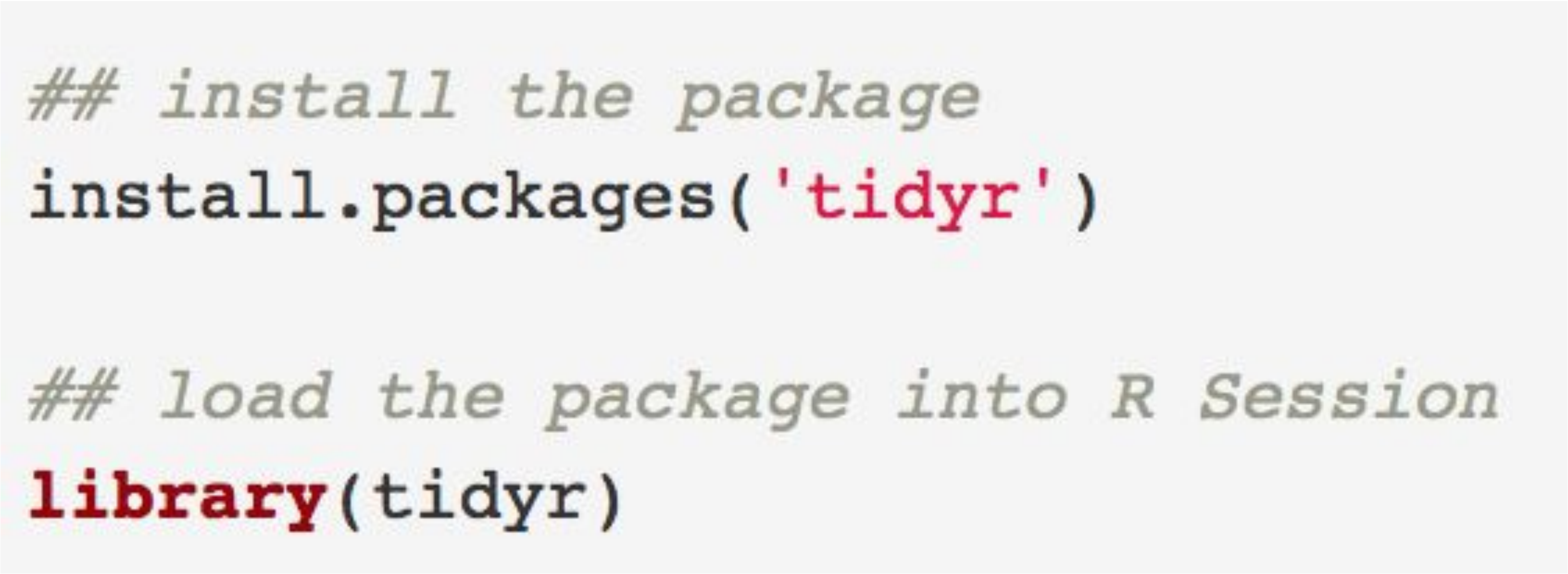
long data



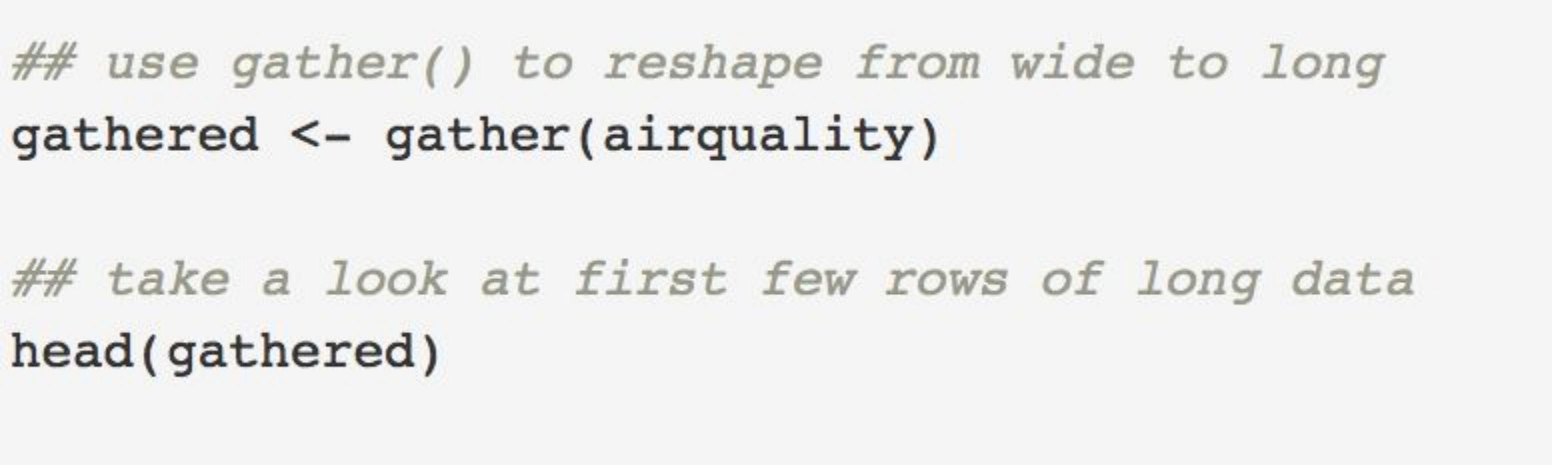
	A	B	C
1	**ID**	**Variable**	**Value**
2	1004	LastName	Smith
3	4587	LastName	Nayef
4	1727	LastName	Doe
5	6879	LastName	Jordan
6	1004	FirstName	Jane
7	4587	FirstName	Mohammed
8	1727	FirstName	Janice
9	6879	FirstName	Alex
10	1004	Height_inches	65
11	4587	Height_inches	75
12	1727	Height_inches	62
13	6879	Height_inches	77
14	1004	Weight_lbs	180
15	4587	Weight_lbs	215
16	1727	Weight_lbs	124
17	6879	Weight_lbs	160
18	1004	Insulin	0.60
19	4587	Insulin	1.46
20	1727	Insulin	0.72
21	6879	Insulin	1.23
22	1004	Glucose	163
23	4587	Glucose	150
24	1727	Glucose	177
25	6879	Glucose	205



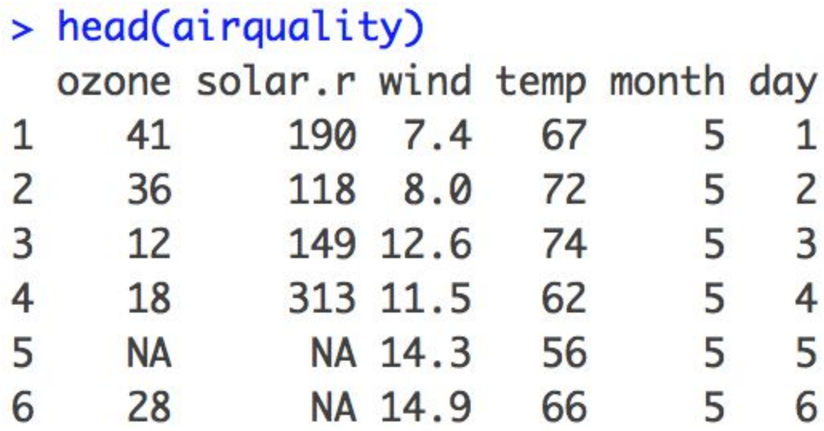
```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```



```r
## install the package
install.packages('tidyr')

## load the package into R Session
library(tidyr)
```

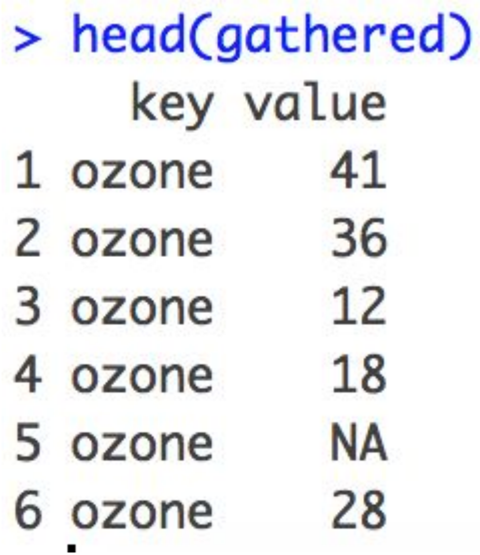


```
## use gather() to reshape from wide to long
gathered <- gather(airquality)

## take a look at first few rows of long data
head(gathered)
```

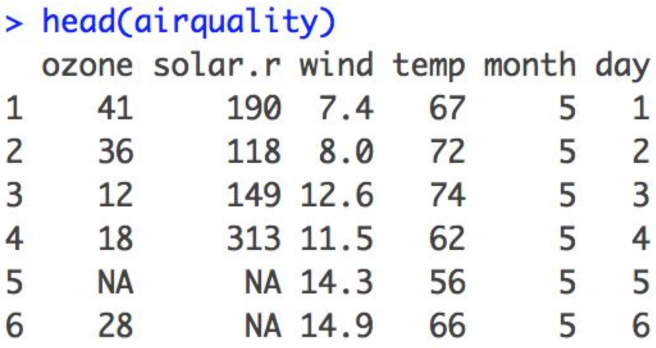


```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```

gather(airquality)

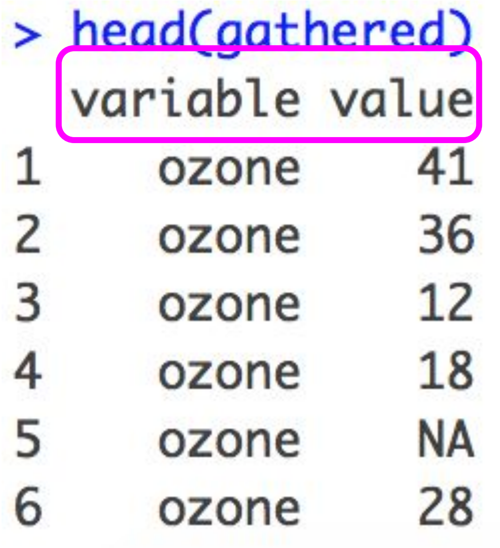


```
> head(gathered)
    key value
1 ozone    41
2 ozone    36
3 ozone    12
4 ozone    18
5 ozone    NA
6 ozone    28
```

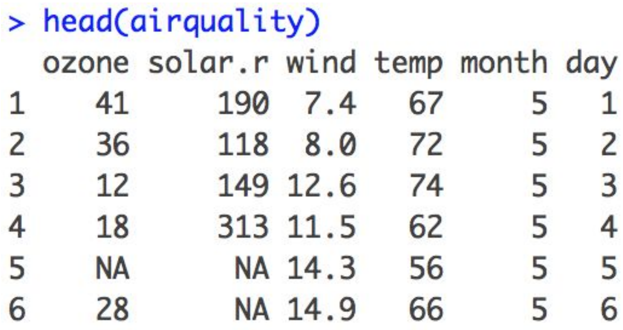


```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```

gather(airquality,
key="variable", value="val")

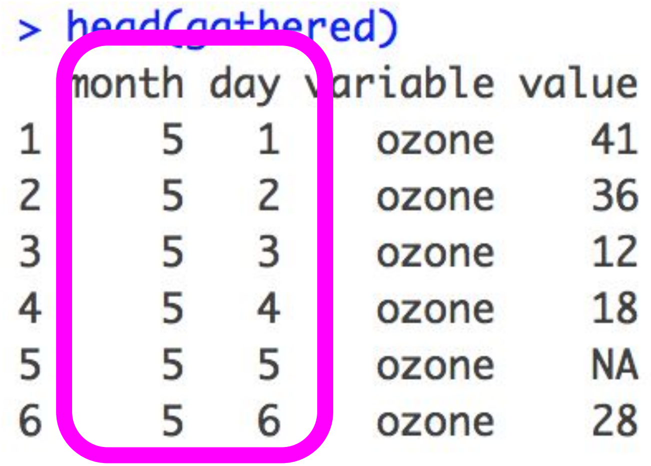


```
> head(gathered)
  variable value
1    ozone    41
2    ozone    36
3    ozone    12
4    ozone    18
5    ozone    NA
6    ozone    28
```

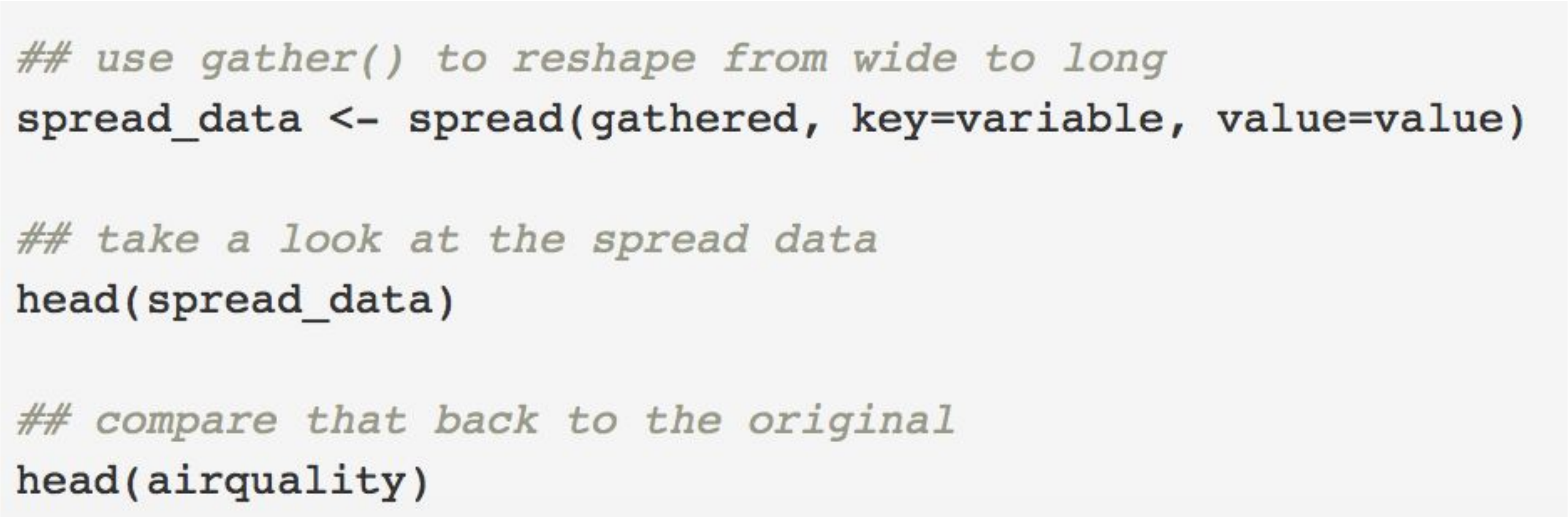


```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```

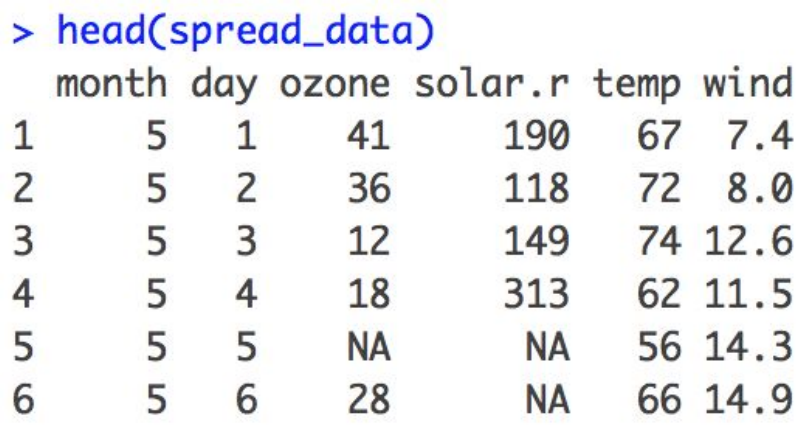
gather(airquality, key="variable",
value="value",
ozone, solar.r, wind, temp)



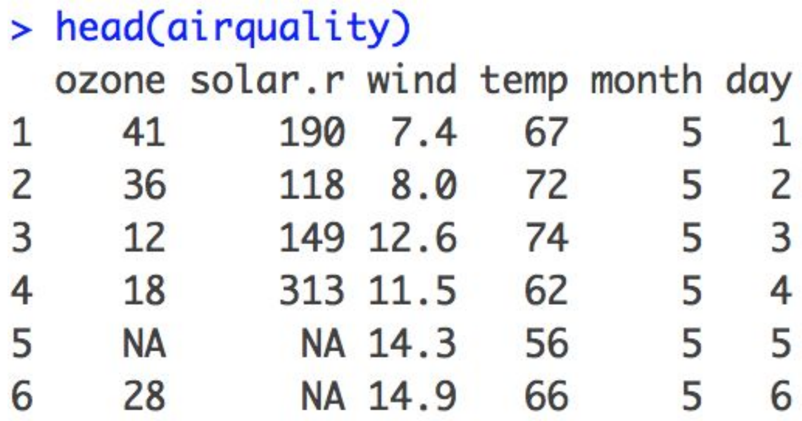
```
> head(gathered)
  month day variable value
1     5   1    ozone    41
2     5   2    ozone    36
3     5   3    ozone    12
4     5   4    ozone    18
5     5   5    ozone    NA
6     5   6    ozone    28
```



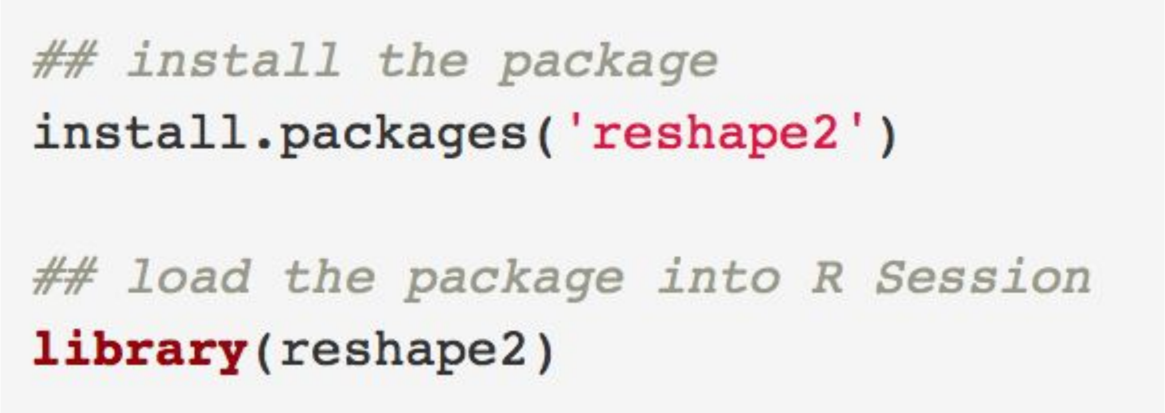
```
## use gather() to reshape from wide to long
spread_data <- spread(gathered, key=variable, value=value)

## take a look at the spread data
head(spread_data)

## compare that back to the original
head(airquality)
```



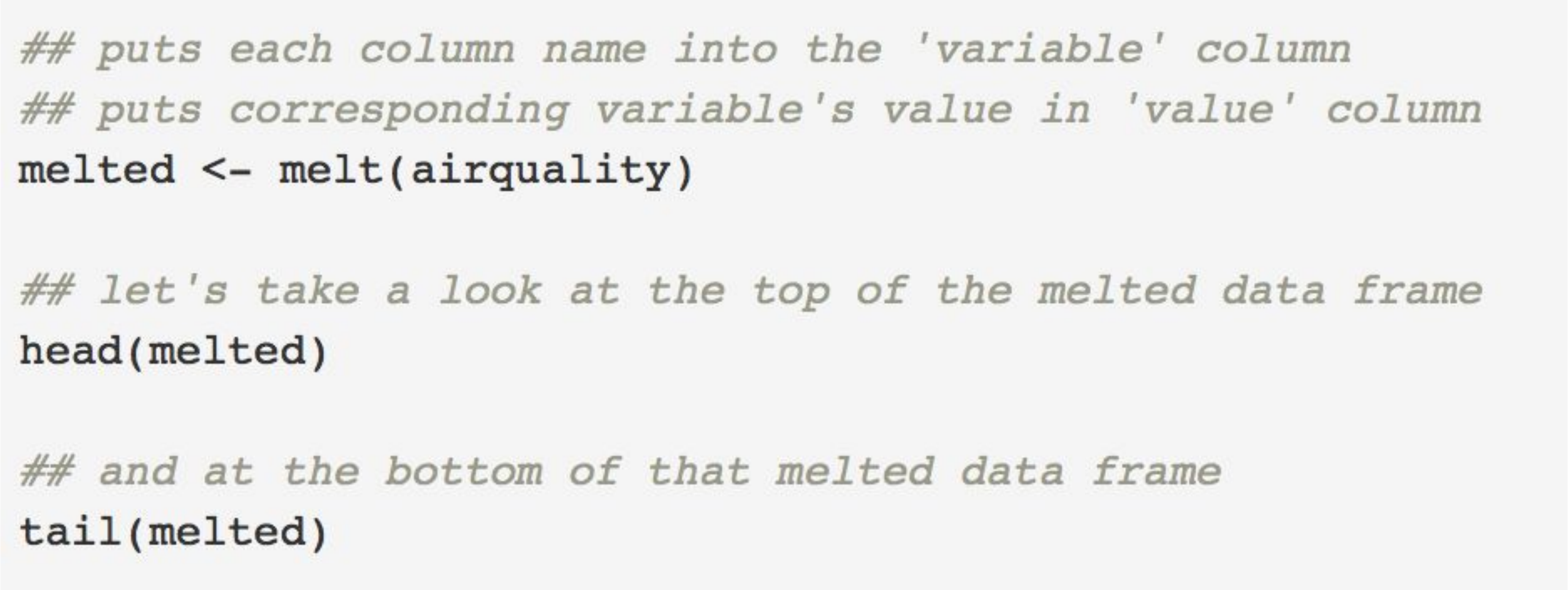
```
> head(spread_data)
  month day ozone solar.r temp wind
1     5   1    41     190   67  7.4
2     5   2    36     118   72  8.0
3     5   3    12     149   74 12.6
4     5   4    18     313   62 11.5
5     5   5    NA      NA   56 14.3
6     5   6    28      NA   66 14.9
```



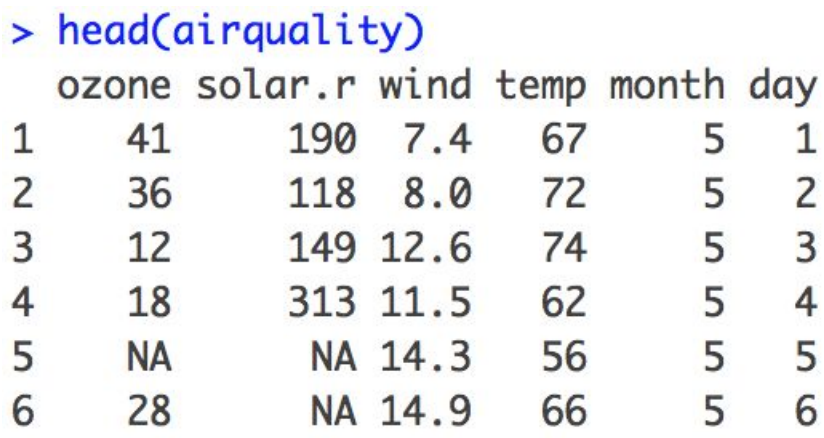
```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```



```r
## install the package
install.packages('reshape2')

## load the package into R Session
library(reshape2)
```

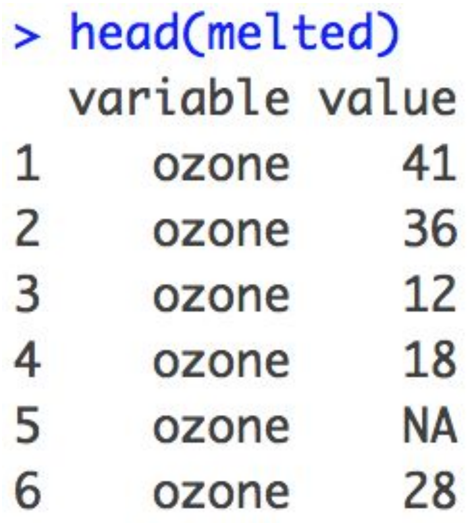


```r
## puts each column name into the 'variable' column
## puts corresponding variable's value in 'value' column
melted <- melt(airquality)

## let's take a look at the top of the melted data frame
head(melted)

## and at the bottom of that melted data frame
tail(melted)
```

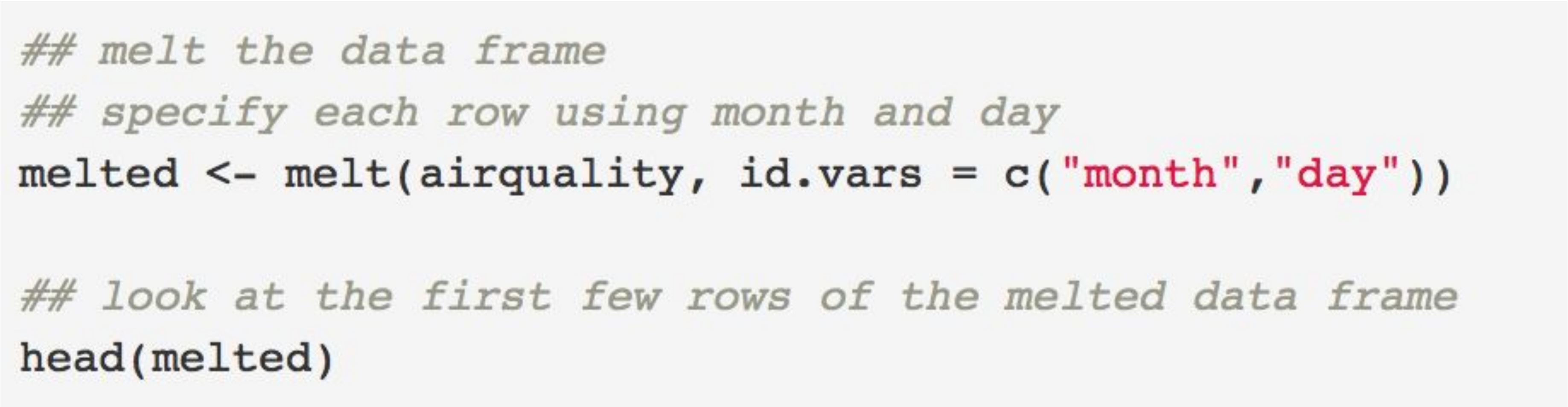


```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```

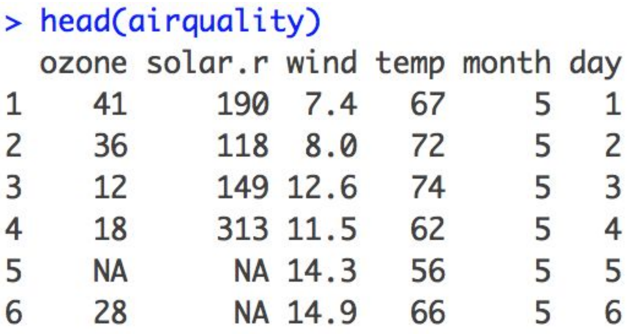
melt(airquality)



```
> head(melted)
  variable value
1    ozone    41
2    ozone    36
3    ozone    12
4    ozone    18
5    ozone    NA
6    ozone    28
```

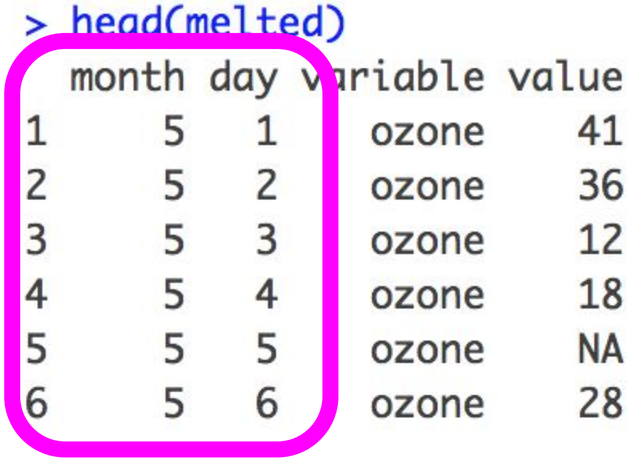


```
## melt the data frame
## specify each row using month and day
melted <- melt(airquality, id.vars = c("month","day"))

## look at the first few rows of the melted data frame
head(melted)
```

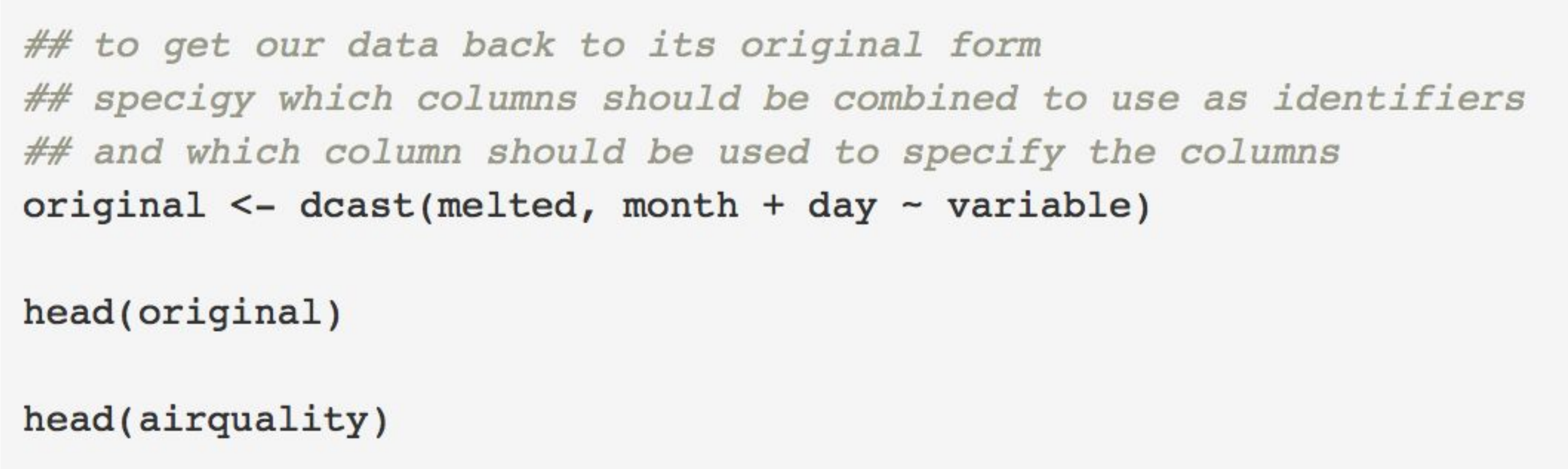


```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```

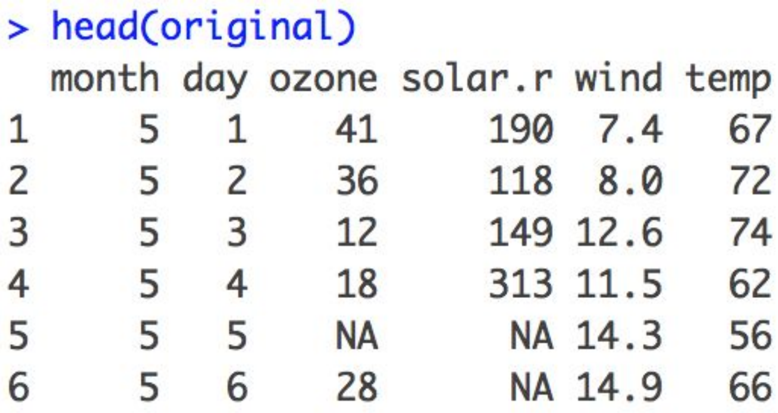
melt(airquality, id.vars = c("month","day"))



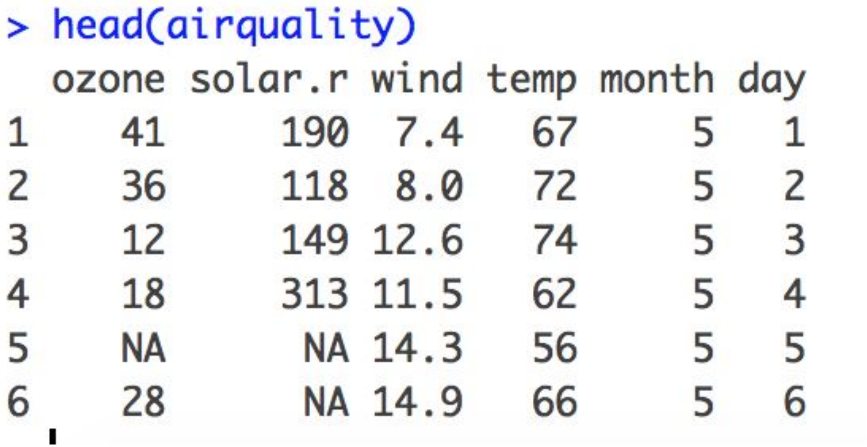
```
> head(melted)
  month day variable value
1     5   1    ozone    41
2     5   2    ozone    36
3     5   3    ozone    12
4     5   4    ozone    18
5     5   5    ozone    NA
6     5   6    ozone    28
```



```
## to get our data back to its original form
## specigy which columns should be combined to use as identifiers
## and which column should be used to specify the columns
original <- dcast(melted, month + day ~ variable)

head(original)

head(airquality)
```



```
> head(original)
  month day ozone solar.r wind temp
1     5   1    41     190  7.4   67
2     5   2    36     118  8.0   72
3     5   3    12     149 12.6   74
4     5   4    18     313 11.5   62
5     5   5    NA      NA 14.3   56
6     5   6    28      NA 14.9   66
```



```
> head(airquality)
  ozone solar.r wind temp month day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
3    12     149 12.6   74     5   3
4    18     313 11.5   62     5   4
5    NA      NA 14.3   56     5   5
6    28      NA 14.9   66     5   6
```