Summaries by factors

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Let's create summaries by factors. Here you'll learn how to:

- Install a new package
- Load a package
- Get average summary statistics by group
- Dump a latex table

1 Install a package

There are two ways to install a package: 1. Menu 2. Command Line

```
#install.packages('plyr')
#install.packages('xtable')
```

2 Load plyr

Plyr is a library that offers the command `ddply`, a very useful tool to explore your data

```
library("plyr")
```

3 Let's summarize the mtcars data to learn about gas consumption

```
data(mtcars)
#summarize MPG data in mtcars by number of cylinders
ddply(mtcars,.(cyl),summarize,avg_MPG=mean(mpg))
```

```
##   cyl  avg_MPG
## 1   4 26.66364
## 2   6 19.74286
## 3   8 15.10000
```

```
#summarize MPG data in mtcars by transmission
ddply(mtcars,.(am),summarize,avg_MPG=mean(mpg))
```

```
##   am  avg_MPG
## 1  0 17.14737
## 2  1 24.39231
```

```r
# Let's modify am into a factor with labels 0="AUTOMATIC",1="MANUAL"
mtcars$f_am<-factor(mtcars$am,levels=c(0,1),labels=c("AUTOMATIC","MANUAL"))
# Now, let's summarize it again by the new factor
ddply(mtcars,.(f_am),summarize,avg_MPG=mean(mpg))
```

```
##        f_am  avg_MPG
## 1 AUTOMATIC 17.14737
## 2    MANUAL 24.39231
```

```r
#summarize MPG and weight data in mtcars by number of cylinders and transmission
my_table<-ddply(mtcars,.(cyl,f_am),summarize,avg_MPG=mean(mpg),avg_WT=mean(wt))
print(my_table)
```

```
##   cyl      f_am  avg_MPG   avg_WT
## 1   4 AUTOMATIC 22.90000 2.935000
## 2   4    MANUAL 28.07500 2.042250
## 3   6 AUTOMATIC 19.12500 3.388750
## 4   6    MANUAL 20.56667 2.755000
## 5   8 AUTOMATIC 15.05000 4.104083
## 6   8    MANUAL 15.40000 3.370000
```

```r
library(xtable)

xtab<-xtable(my_table,caption="Average Consumption per number of cylinders", label="lab:avgmpg")
print(xtab,type="latex")
```

% latex table generated in R 3.1.3 by xtable 1.8-2 package % Sun May 15 23:07:50 2016

	cyl	f_am	avg_MPG	avg_WT
1	4.00	AUTOMATIC	22.90	2.94
2	4.00	MANUAL	28.07	2.04
3	6.00	AUTOMATIC	19.12	3.39
4	6.00	MANUAL	20.57	2.75
5	8.00	AUTOMATIC	15.05	4.10
6	8.00	MANUAL	15.40	3.37

Table 1: Average Consumption per number of cylinders

4 Exercise:

1- Change cylinders into a factor (4="SMALL",6="MEDIUM",8="BIG"), repeat the summarization and print the latex table

2- Summarize average MPG by number of gears