



R Code for Examples in the book  
*"Statistics: The Art and Science of Learning from Data"*  
 by Agresti, Franklin and Klingenberg, 5<sup>th</sup> edition

## Chapter 2

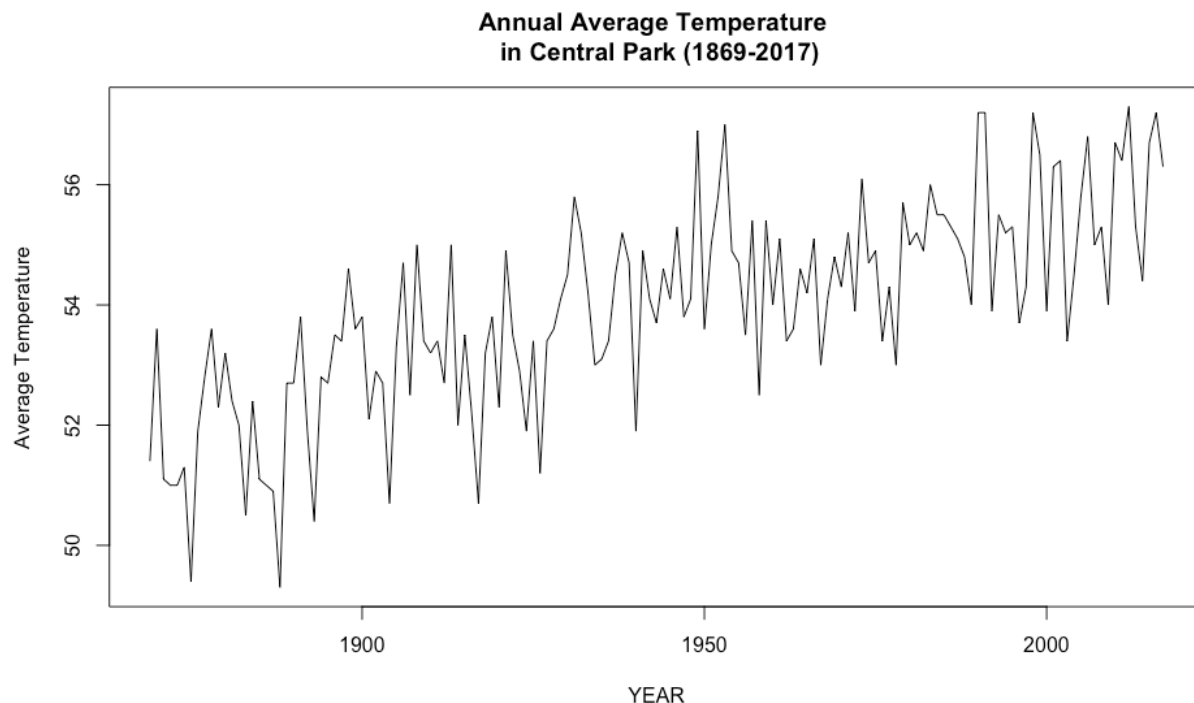
### Example 9: Warming Trend in NYC – Time Plot

Read in dataset (using updated version):

```
temps <-  
read.csv('http://www.artofstats.com/data/chapter2/central_park_yearly_temps_u  
pto2017.csv')  
attach(temps) # so we can refer to variable names
```

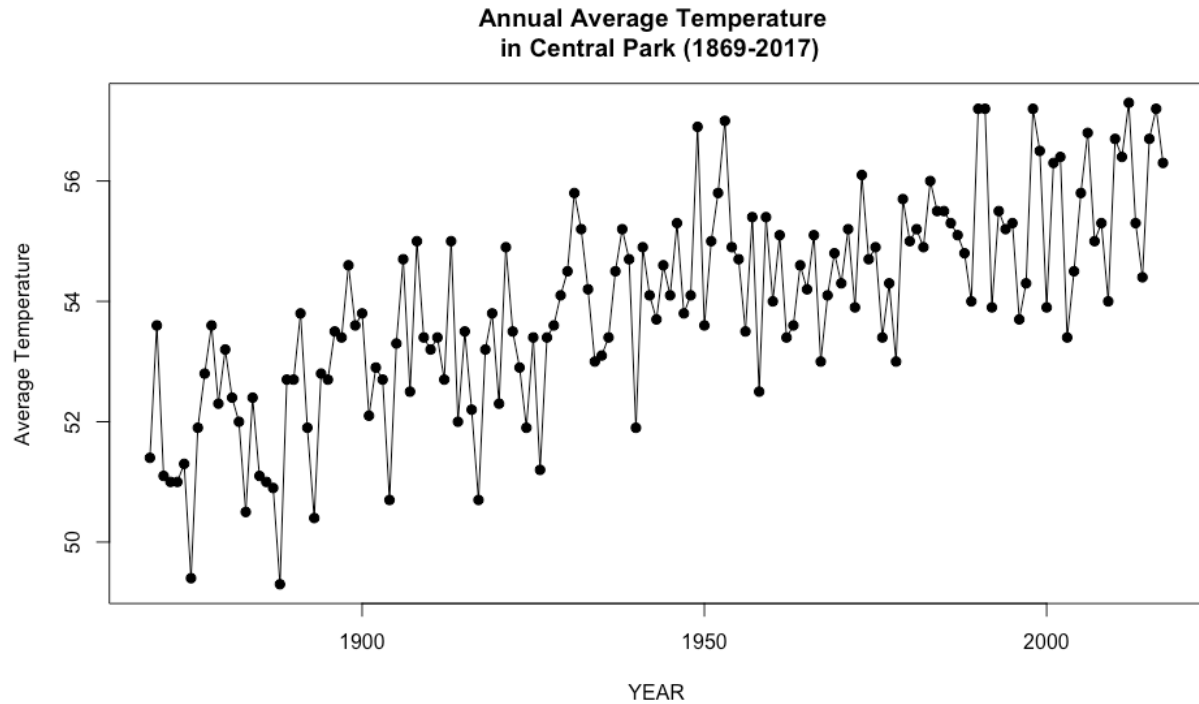
Basic Time Plot:

```
plot(x = YEAR, y = ANNUAL, type = 'l',  
     main = 'Annual Average Temperature \n in Central Park (1869-2017)',  
     ylab = 'Average Temperature')
```



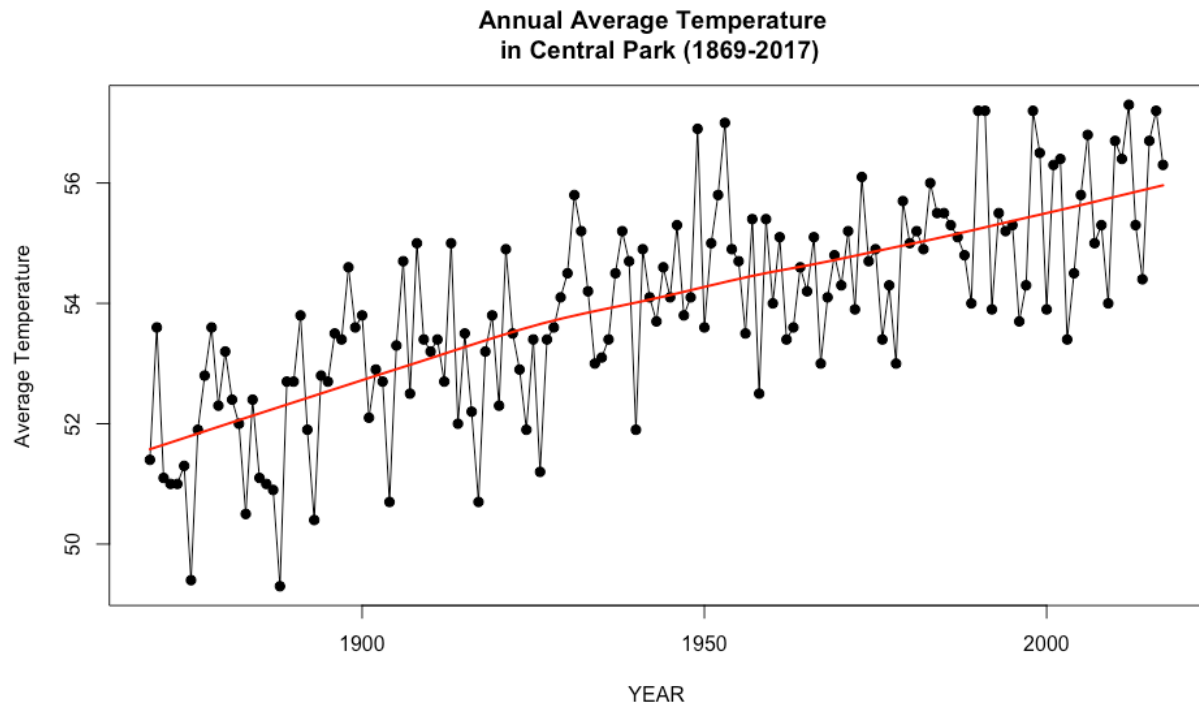
### Include Points:

```
plot(x = YEAR, y = ANNUAL, type = 'o', pch=19,  
     main = 'Annual Average Temperature \n in Central Park (1869-2017)',  
     ylab = 'Average Temperature')
```



### Include Smooth Trend Line:

```
scatter.smooth(x = YEAR, y = ANNUAL, type = 'o', pch=19,  
              lpars = list(col = 'red', lwd = 2),  
              main = 'Annual Average Temperature \n in Central Park (1869-  
2017)',  
              ylab = 'Average Temperature')
```



For more fine tuning, it is better to use the ggplot2 library. If you haven't installed it already, first type: `install.packages(ggplot2)`.

```
library(ggplot2)
ggplot(data = temps, aes(x = YEAR, y = ANNUAL)) +
  geom_point(color = 'blue') +
  geom_line() +
  geom_smooth(col = 'red', fill = 'orange') +
  labs(title = 'Annual Average Temperature \n in Central Park (1869-2017)',
       y = 'Average Temperature') +
  scale_x_continuous(breaks = seq(min(YEAR), max(YEAR), 10)) +
  theme_bw() +
  theme(panel.grid.minor.x = element_blank())
```

