HW 1

February 12, 2021

1 IST 387 HW 1

[1]:
```
# Enter your name here: Connor Hanan
```

1.0.1 Attribution statement: (choose only one and delete the rest)

[2]:
```
# 1. I did this homework by myself, with help from the book and the professor.
```

Define a variable:

[3]:
```
x <- 280
```

Define the following vectors, which represent the **population** (in thousands) and **number of colleges** in each of the five counties in Central New York (CNY) – **Cayuga**, **Cortland**, **Madison**, **Onondaga**, and **Oswego**, in this order:

[4]:
```
population <- c(80, 49, 73, 467, 122)
colleges <- c(2, 2, 3, 9, 2)
```

2 Part 1: Calculating statistics using R

A. Show the number of observations in the **population** vector with the length() function:

[5]:
```
length(population)
```

5

B. Show the number of observations in the **colleges** vector with the length() function:

[6]:
```
length(colleges)
```

5

C. Calculate the average CNY population using the mean() function:

[7]:
```
mean(population)
```

158.2

D. Calculate the average number of colleges in CNY using the mean() function:

[8]:
```
mean(colleges)
```

3.6

E. Calculate the total CNY population using the sum() function:

[9]:
```
sum(population)
```

791

F. Calculate the total number of colleges in CNY using the sum() function:

[10]:
```
sum(colleges)
```

18

G. Calculate the average CNY population again, this time using **results from steps A & E**:

[11]:
```
sum(population)/length(population)
```

158.2

H. Calculate the average number of colleges in CNY again, this time using **results from steps B & F**:

[12]:
```
sum(colleges)/length(colleges)
```

3.6

3 Part 2: Using the max/min and range functions in R

I. Which county has the most colleges? Hint: Use the max() function:

[13]:
```
max(colleges)

"Onondaga County"
```

9

'Onondaga County'

J. Which is the least populous county in CNY? **Hint:** Use the min() function:

[14]:
```
min(population)

"Cortland County"
```

49

'Cortland County'

K. Display the populations of the least populous and most populous county in the dataset together. **Hint:** Use the range() function:

[15]:
```
range(population)

"Cortland County, Onondaga County"
```

1. 49 2. 467

'Cortland County, Onondaga County'

4 Part 3: Vector Math

L. Create a new vector called **extraPop**, which is the current population of a county + **50** (each county has 50,000 more people):

[16]:
```
extraPop = population + 50

population
extraPop
```

1. 80 2. 49 3. 73 4. 467 5. 122

1. 130 2. 99 3. 123 4. 517 5. 172

M. Calculate the average of **extraPop**:

[17]:
```
mean(extraPop)
```

208.2

N. In a variable called **bigCounties**, store all the population numbers **greater than 120** (using **subsetting** in R):

[18]:
```
bigCounties = population[population>120]

bigCounties
```

1. 467 2. 122

O. Report the length of **bigCounties** and the names of these counties:

[19]:
```
length(bigCounties)

"Onondaga County, Oswego County"
```

2

'Onondaga County, Oswego County'

[ ]:
```

```