**STA 502 NAME: Lina Lee**

1. **SAS CODE**

**/\*header: Exercise Number 1** Create simulated data for a possible regression model

**Author: Lina Lee**

**Purpose:** Create simulated data for a possible regression model and a scatter plot of the data with a superimposed regression line.

**input None**

**input variable: None**

**\*/**

**/\*1. Create simulated data\*/**

ods rtf file="C:\Users\linal\Desktop\2018\STA502\HW3\results3" bodytitle style=journal;

data random;

pi=constant("pi");

do i=0 to 20 by 0.1;

x\_val=i;

y\_val=rand("normal",1.2-3\*x\_val+0.2\*x\_val\*\*2+sin(1/2\*pi\*x\_val),4); \*mean, sd;

output;

end;

run;

**/\*1. create a scatter plot of the data with a superimposed regression line\*/**

proc sgplot data=random;

title "EX1 a scatter plot with a regression line ";

scatter x=x\_val y=y\_val;

reg x=x\_val y=y\_val;

run;

**/\*header: Exercise Number 2** Create subset by keeping observations which satisfy a condition.

**Author: Lina Lee**

**Purpose:** Read the dataset into SAS, and cre-ate a new dataset, keeping only the flavors that can be purchased, Subset the data again by keeping only observations related with “low calories icecream"

at grocery store. Sort the data you read from question (a), by calories (by de-scending order), holesterol (by descending order) and sodium (by ascending order).

**input** BenAndJerrys.dat

**input variable:** name: flavor name, size: portion size, calories, calfat: calories from fat, fat, satfat:saturated fat, transfat: trans fat, chole: cholesterol, sodium, carbohydrate: total carbohydrate, fiber:dierary fiber, sugars, protein, year\_intro:year introduced, year\_retired, content:content description, note:notes.

**\*/**

**/\*2-(a) Read the dataset into SAS\*/**

data BenandJerry;

infile "C:\Users\linal\Desktop\2018\STA502\HW3\BenAndJerrys.dat" dlm="," dsd missover encoding=wlatin1;

input name:$30. size calories calfat fat satfat transfat chole sodium carbohydrate fiber sugars protein year\_intro year\_retired content

:$90. note:$20.;

run;

**/\*2-(b) keep only the avors that can be purchased at grocery store, and count observations\*/**

data Ben1;

set BenandJerry;

if year\_retired=" ";

if note="Scoop Shop Exclusive" then delete;

run;

**/\*2-(c)Create a variable that calculates the calories in one tablespoon (TB)\*/**

data Ben2;

set Ben1;

caltablespoon=calories/size\*15;

if caltablespoon<30 then criteria="low calories icecream";

run;

**/\*2-(c)Keep only observations related with \low calories icecream,**

**keep the flavor, calories,the content description and the calories in one TB\*/**

Data subset;

set Ben2;

if criteria="low calories icecream";

if caltablespoon=. then delete;

keep name calories content caltablespoon;

run;

**/\*2-(c)Print a table containing the flavor, calories,the content description and the calories in one TB\*/**

proc print data=subset;

title "EX2 -(c) a table containing the flavor, calories,the content description and the calories in one TB"

run;

**/\*2-(d)Sort the data you read from question (a), by calories (by de-**

**scending order), cholesterol (by descending order) and sodium**

**(by ascending order)\*/**

proc sort data=Benandjerry out=Sort;

by descending calories descending chole sodium;

run;

**/\*Print the flavor, calories, cholesterol and sodium information for the observations with calories value equal**

**to 280.\*/**

Data Sort2;

set Sort;

if calories=280;

keep name calories chole sodium;

run;

proc print data=sort2;

title "EX2-(d) a table with flavor, calories, cholesterol and sodium information with calories value equal to 280";

run;

**/\*header: Exercise Number 3, Use array to convert the measure of those six visits to the correct scale**

**Author: Lina Lee**

**Purpose: Use array to convert the measure of those six visits to the correct scale. Only print ID, height, weight, BMI and the six questions in the second visit.**

**Input: wls.sas7bdat**

**input variable:**

**StudentID Height Weight BodyMassIndex**

**Q1~Q30: responses to six survey questions regarding weight loss were obtained at each of five visits for a total of 30 survey questions*\*/***

**/\*EX3 convert the measure of those six visits to the correct scale\*/**

data Wls2;

set Tmp1.Wls;

array visit[\*] Q7-Q12;

do i=1 to 6;

visit[i]=3-visit[i];

end;

run;

**/\*EX3 print ID,height, weight, BMI and the six questions in the second visit\*/**

proc print data=Wls2 (obs=3);

title "EX3 a table with ID,height, weight, BMI and the six questions in the second visit";

var ID Height Weight BMI Q7-Q12;

run;

ods rtf close;

2) Answers

EX1 Answers: The scatter plot and the regression line are below.



EX2-(b) Answers: there are 59 observations

Log file:

221 data Ben1;

222 set BenandJerry;

223 if year\_retired=" ";

224 if note="Scoop Shop Exclusive" then delete;

225 run;

NOTE: Character values have been converted to numeric values at the places given by: (Line):(Column).

223:17

NOTE: There were 71 observations read from the data set WORK.BENANDJERRY.

NOTE: The data set WORK.BEN1 has 59 observations and 17 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

EX2-(c) Answer: Below is the table.

***EX2 -(c) a table containing the flavor, calories,the content description and the calories in one TB run***

| *Obs* | *name* | *calories* | *content* | *caltablespoon* |
| --- | --- | --- | --- | --- |
| *1* | Cherry Garcia® FroYo | 200 | Cherry Low Fat Frozen Yogurt with Cherries & Fudge Flakes | 27.7778 |
| *2* | Chocolate Fudge Brownie FroYo | 180 | Chocolate Low Fat Frozen Yogurt with Fudge Brownies | 25.9615 |
| *3* | Half Baked® FroYo | 180 | Chocolate & Vanilla Low Fat Frozen Yogurts with Fudgey Brownies & Chocolate Chip Cookie Do | 27.2727 |
| *4* | Berried Treasure | 110 | Chunky Blueberry and Blackberry Sorbet Swirled with Zesty Lemon Sorbet | 16.8367 |
| *5* | Jamaican Me Crazy | 130 | Chunky Pineapple sorbet with a passion fruit swirl | 19.1176 |

EX2-(d) Answer: below is my answer.

***EX2-(d) a table with flavor, calories, cholesterol and sodium information with calories value equal to 280***

| *Obs* | *name* | *calories* | *chole* | *sodium* |
| --- | --- | --- | --- | --- |
| *1* | Crème Brûlée | 280 | 90 | 70 |
| *2* | Pistachio Pistachio® | 280 | 70 | 95 |
| *3* | Vanilla Caramel Fudge | 280 | 70 | 95 |
| *4* | Cannoli (limited) | 280 | 65 | 60 |
| *5* | Triple Caramel Chunk | 280 | 65 | 85 |
| *6* | Vanilla HEATH® Bar Crunch | 280 | 65 | 95 |
| *7* | Fossil Fuel | 280 | 60 | 75 |
| *8* | Coffee HEATH® Bar Crunch | 280 | 60 | 95 |
| *9* | Turtle Soup | 280 | 60 | 100 |
| *10* | Bonnaroo Buzz | 280 | 60 | 115 |
| *11* | Coconut Seven Layer Bar | 280 | 50 | 45 |
| *12* | Phish Food® | 280 | 35 | 80 |

EX3Answers: below is print of the first three observations of the dataset.

***EX3 a table with ID,height, weight, BMI and the six questions in the second visit***

| *Obs* | *ID* | *Height* | *Weight* | *BMI* | *Q7* | *Q8* | *Q9* | *Q10* | *Q11* | *Q12* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *1* | 1 | 69 | 182 | 26.8738 | . | . | 2 | 2 | 0 | 1 |
| *2* | 2 | 64 | 123 | 21.1106 | 1 | 3 | 3 | 3 | 3 | 2 |
| *3* | 3 | 60 | 137 | 26.7531 | 0 | 0 | 1 | 1 | 3 | 1 |