MAT: 3312 Homework assignment 6 (Regression Analysis)

Name: Student5 Date: 04/26/2021

Due: April 28th at 12:40. Upload to canvas.

The table below is from a sample of SBP of kids who are average height.

Age (x)	SBP (y)	Age (x)	SBP (y)
1	99	10	115
2	102	11	117
3	105	12	120
4	107	13	122
5	108	14	125
6	110	15	127
7	111	16	130
8	112	17	132
9	114		

Input the data above into SAS.

Question 1. Run a linear regression model to determine relating age to Systolic Blood Pressure. Paste output here (Analysis of Variance and Parameter estimate tables).

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	1502.66912	1502.66912	1012.03	<.0001
Error	15	22.27206	1.48480		
Corrected Total	16	1524.94118			

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	1	97.78676	0.61816	158.19	<.0001
age	1	1.91912	0.06033	31.81	<.0001

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Question 2. Provide an interpretation of the parameter estimate for age.

Systolic Blood Pressure increases 1.91912 units for each unit increase in age.

Question 3. Provide an interpretation of the parameter estimate for the intercept.

Systolic Blood Pressure is 97.78676 when age is 0.

Question 2. Test for the statistical significance of this regression line using the F test. What is the F-test statistics?

1012.03

Question 3. What is the p-value from the F-test statistics?

< 0.0001

Question 4. What is the conclusion for based on the p-value from the F test?

We will reject the null hypothesis, there is evidence that our model provides a better fit than the intercept-only model.

Question 5. Test for the statistical significance of the regression line using the t-test. What is the t-test statistics?

31.81

Question 6. What is the p-value from the t-test statistics?

< 0.0001

Question 7. What is the conclusion for based on the p-value from the t test?

We will reject the null hypothesis. There is enough evidence that the relating age has a significant linear effect to Systolic Blood Pressure.

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Paste code here.

```
LIBNAME datalib"~/my_shared_file_links/griffinfr0/" access=readonly;
data SBP;
input age SBP;
cards;
1 99
2 102
3 105
4 107
5 108
6 110
7 111
8 112
9 114
10 115
11 117
12 120
13 122
14 125
15 127
16 130
17 132
;
run;
proc reg data = SBP;
model SBP = age;
run;
```