Analysis of BP1 data

Heeyeon Yoon

Introduction

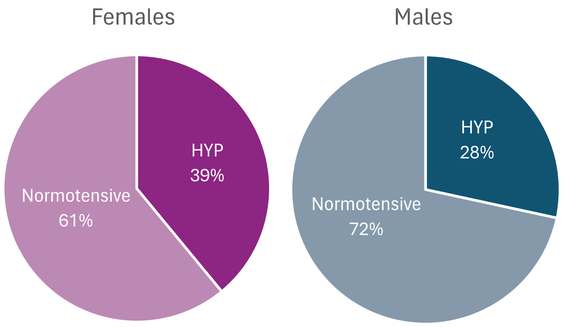

Figure 1: Rates of individuals with HYP for each Gender

HYP levels were approximately 11% higher in females compared to males

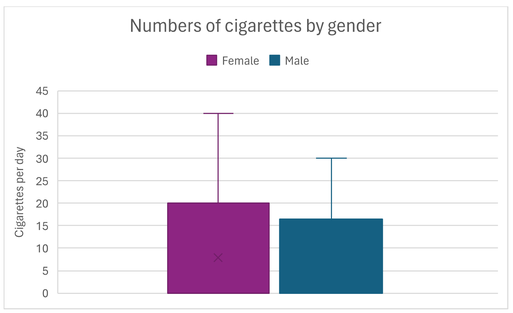

Figure 2 : Cigarette consumption by gender

Females tended to smoke more cigarettes per day on average than males

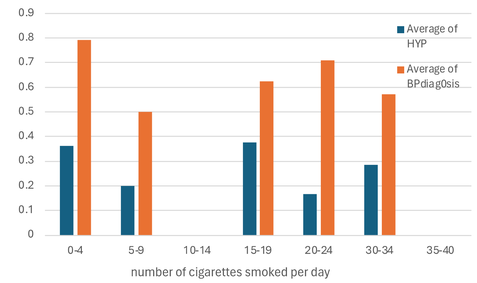

Figure 3 : Average HYP & BP diagnosis by daily cigarette consumption

proportional relationship between HYP and BP diagnosis

Methods

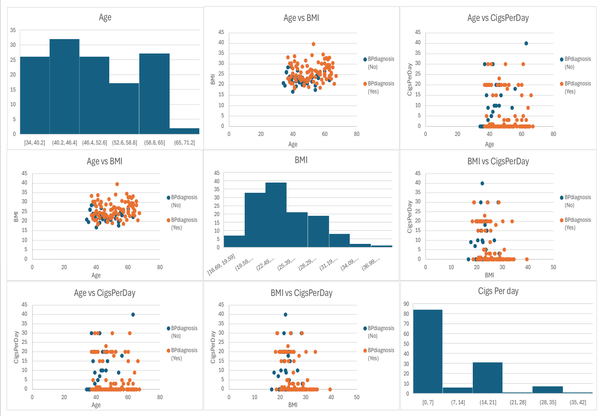

Figure 4: A Scatterplot Matrix for comparative analysis

A Scatterplot Matrix that illustrates the two categories (BP diagnosis No/Yes) for three numeric variables (Age, BMI, Cigarettes per day)

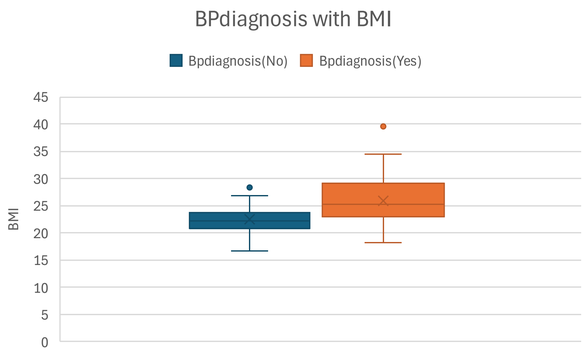

Figure 5: Average BMI according to the results of BP diagnosis

Individuals with higher BMIs tended to have more positive BP diagnosis on average

Results

	BMI	*cigsPerDay*
Mean	24.9277692	7.53076923
Variance	17.2316779	101.27424
Observations	130	130
Pearson Correlation	-0.3069115	
Hypothesized Mean Difference	0	
df	129	
t Stat	16.5211949	
P(T<=t) one-tail	6.1832E-34	
t Critical one-tail	1.65675159	
P(T<=t) two-tail	1.2366E-33	<0.05
t Critical two-tail	1.97852449	

Figure 6: Result of t-Test (between Cigarettes per day and BMI)

NULL Hypothesis:

"There is no association between the number of cigarettes smoked per day and BMI "

P-value is small, specifically 1.2366E-33. Since the value is less than 0.05, the **null hypothesis is rejected**

	sex	*age*	*BMI*	*cigsPerDay*	*HYP*	*BPdiag0sis*
sex	1					
age	0.088480723	1				
BMI	0.212207855	0.22451444	1			
cigsPerDay	0.019296748	-0.164250437	-0.301991709	1		
HYP	0.054865058	0.384262659	0.290903475	-0.127670317	1	
BPdiag0sis	-0.019827471	0.366912016	0.373729729	-0.165308446	0.380277617	1

Figure 7: Result of correlation coefficient for all the variables

This matrix displays the highest correlation between HYP and age, and the lowest correlation between gender and age

Conclusions

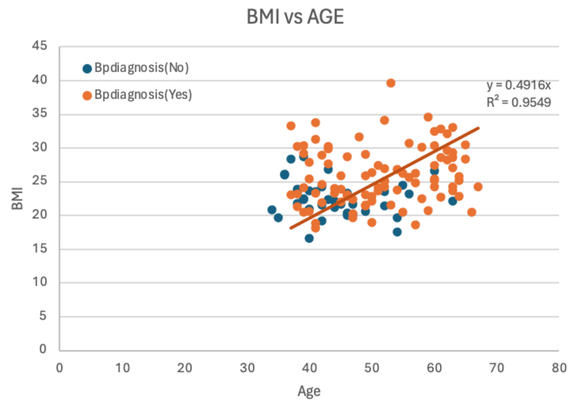

Figure 8: Linear regression model for age and BMI

Conclusion:

The number of cigarettes smoked per day increases, BMI also tends to increase.

Additionally, according to Figure 8, as both BMI and age increase, there is a higher likelihood of receiving a positive blood pressure diagnosis.

References

1. Kumari, K. and Yadav, S. (2018). Linear Regression Analysis Study. *Journal of the Practice of Cardiovascular Sciences*, 4(1), pp.33–36. doi:https://doi.org/10.4103/jpcs.jpcs_8_18.

2. Oja, H. (1983). Descriptive statistics for multivariate distributions. *Statistics & Probability Letters*, 1(6), pp.327–332. doi:https://doi.org/10.1016/0167-7152(83)90054-8.

3. Omvik, P. (1996). How smoking affects blood pressure. *Blood Pressure*, [online] 5(2), pp.71–77. doi:https://doi.org/10.3109/08037059609062111.

4. Primatesta, P., Falaschetti, E., Gupta, S., G. Marmot, M. and R. Poulter, N. (2001). Association Between Smoking and Blood Pressure. *Hypertension*, [online] 37(2), pp.187–193. Available at: https://www.ahajournals.org/doi/epub/10.1161/01.HYP.37.2.187 [Accessed 21 Aug. 2000].

5. Wilhelmsen, L. (1996). Smoking and Blood Pressure. *Blood Pressure*, 5(2), pp.69–70. doi:https://doi.org/10.3109/08037059609062110.