1. In a clinical trial the following data was obtained for a cohort of persons were subjected to a dietary intervention to alleviate conditions of high albumen, glucose and potassium levels. The individuals were divided into two cohorts which were exposed to two varying diets: the Leucine diet and the Tryptohan diet.

The parameters for the various individuals before and after were as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Leucine diet | | | | | |
| Cohort age | Before | | | After | | |
|  | albumen | glucose | potassium | albumen | Glucose | potassium |
| 20-30 | 4.5 | 120 | 4.0 | 3.8 | 115 | 4.3 |
| 30-40 | 5.0 | 125 | 4.5 | 4.9 | 120 | 5.3 |
| 40-50 | 5.5 | 130 | 3.8 | 5.1 | 125 | 5.1 |
| 50-60 | 6.5 | 128 | 5.1 | 6.2 | 124 | 5.2 |
| 60-70 | 7.0 | 135 | 3.7 | 6.9 | 128 | 4.8 |
| 80+ | 7.8 | 138 | 3.9 | 7.1 | 135 | 7.6 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Leucine diet | | | | | |
| Cohort systolic BP range | Before | | | After | | |
|  | albumen | glucose | potassium | albumen | Glucose | potassium |
| 120-140 | 5.0 | 125 | 4.2 | 5.6 | 120 | 4.8 |
| 140-160 | 6.5 | 130 | 4.5 | 6.3 | 128 | 4.2 |
| 160-180 | 7.2 | 135 | 5.4 | 6.8 | 130 | 3.8 |
| 200+ | 7.8 | 138 | 4.9 | 6.9 | 125 | 3.9 |

The parameters for persons on the tryptophan diet

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Tryptophan diet | | | | | |
| Cohort age | Before | | | After | | |
|  | albumen | glucose | potassium | albumen | Glucose | potassium |
| 20-30 | 5.5 | 125 | 4.8 | 7.8 | 120 | 3.3 |
| 30-40 | 5.8 | 145 | 4.9 | 6.9 | 125 | 4.3 |
| 40-50 | 6.5 | 135 | 4.8 | 5.4 | 130 | 4.1 |
| 50-60 | 7.5 | 134 | 5.6 | 8.2 | 135 | 4.2 |
| 60-70 | 8.0 | 134 | 4.7 | 7.9 | 130 | 3.8 |
| 80+ | 8.8 | 138 | 6.9 | 8.5 | 140 | 5.6 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Leucine diet | | | | | |
| Cohort systolic BP Range | Before | | | After | | |
|  | albumen | glucose | potassium | albumen | Glucose | potassium |
| 120-140 | 6.0 | 135 | 7.2 | 7.6 | 128 | 4.4 |
| 140-160 | 8.5 | 138 | 8.5 | 8.3 | 125 | 3.2 |
| 160-180 | 7.8 | 135 | 5.8 | 8.8 | 128 | 3.4 |

Perform these tasks on the above data set in SPSS

1. Formulate relevant hypotheses for the above scenario (10 pts)
2. Perform a higher order test to determine which diet improves the health status of the cohort. (10 pts)
3. Use a multivariate method to determine rank the order of importance of the variables and their impact on the patient cohort. (10 pts)
4. Perform a multivariate analysis that determines which variable combination is the best marker of a patient’s health status. (20 pts)
5. Perform a regression analysis to determine the regression relationship between the variables and the outcome variable. (10 pts)
6. Explain the utility of the regression equation. (10 pts)
7. Perform a logistic regression and estimate using appropriate methods the risk for the patient cohort by age and systolic hypertensive range. (30 pts)

2. In a randomised trial that examined safety equipment to prevent and/or limit play injuries. Seventeen hundred families (1700) were recruited for testing the equipment. The rate of injuries in under five year olds requiring primary medical care over a two year period:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Number of Primary Care Attendances | Child Year at Risks | Rate per 1000 child years |
| Intervention | 240 | 2400 | 82 |
| Control | 180 | 2200 | 44 |

a. Determine the odds ratio for the risk of injury. (20 pts)

b. Determine the log odds and the relative risk for the group with intervention and the control group. (20 pts)

c. Determine the confidence interval for the odds ratio. (20 pts)

d. Interpret the results of the calculations. (40 pts)

THE END