N741: Homework 5

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# Homework 5

Rmarkdown code available here: <https://github.com/JulianneA/N741_Homework5>

## 1. Non-parametric statistics by gender

Summary of Duration of Coma and Number of Days Post-Coma that Assessments Occured by Patient Gender

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sex of Patient | Median Days Post-Coma\* | IQR of Days Post-Coma\* | Median Duration of Coma | IQR of Duration of Coma |
| Female | 135 | 302.5 | 4 | 10 |
| Male | 163 | 371.5 | 7 | 17 |

*Median and IQR in columns 2 and 3 reflect the number of days that pass between awakening from coma and IQ assessment.*

## 2. Parametric statistics by gender

Summary of IQ Outcome Measures by Patient Gender

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sex of Patient | Mean Performance IQ | Standard Deviation of Performance IQ | Mean Verbal IQ | Standard Deviation of Verbal IQ |
| Female | 89.18310 | 17.99866 | 94.35211 | 14.24690 |
| Male | 87.11154 | 14.25658 | 95.13077 | 14.02281 |

## 3. Frequencies and Relative Percentages of Patients by Age

Frequencies and Relative Percentages of Patients in Each Age Group

|  |  |  |
| --- | --- | --- |
| Age Group | Number of Patients | Relative Percentage |
| Ages 1-10 | 1 | 0.30 |
| Ages 11-10 | 53 | 16.01 |
| Ages 21-10 | 144 | 43.50 |
| Ages 31-10 | 48 | 14.50 |
| Ages 41-10 | 42 | 12.69 |
| Ages 51-10 | 27 | 8.16 |
| Ages 61-70 | 14 | 4.23 |
| Ages 71-100 | 2 | 0.60 |

## 4. Modeling PIQ by gender and age

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Estimate | Standard Error | t-value | p-value |
| Intercept | 82.5565051 | 3.2793237 | 25.1748571 | 1.29699510^{-78} |
| Age | 0.0743977 | 0.0600527 | 1.2388736 | 0.2162781 |
| Patient Sex | 2.1651531 | 2.0258169 | 1.0687803 | 0.2859546 |
| R-squared | 0.0078103 |
| Adjusted R-squared | 0.0017603 |
| Degrees of Freedom | p | 3 |
|  | n-p | 328 |
|  | p\* | 3 |

## 5. Modeling PIQ by gender, age, days since coma and coma duration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Estimate | Standard Error | t-value | p-value |
| Intercept | 84.645559 | 3.4604442 | 24.4608939 | 9.182769110^{-76} |
| Age | 0.0542142 | 0.0604989 | 0.8961181 | 0.3708509 |
| Patient Sex | 1.7252891 | 2.0152576 | 0.8561135 | 0.3925638 |
| Days Post-Coma | 0.0011534 | 7.456722610^{-4} | 1.5468461 | 0.1228705 |
| Duration of Coma | -0.1026657 | 0.0328189 | -3.1282468 | 0.0019172 |
| R-squared | 0.0393349 |
| Adjusted R-squared | 0.0275476 |
| Degrees of Freedom | p | 5 |
|  | n-p | 326 |
|  | p\* | 5 |

## 6. Comparing Linear Models

Modeling PIQ by Age and Patient Sex

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| age | 1 | 329.0444 | 329.0444 | 1.439643 | 0.2310631 |
| Patient\_sex | 1 | 261.0818 | 261.0818 | 1.142291 | 0.2859546 |
| Residuals | 328 | 74967.5899 | 228.5597 | NA | NA |

Modeling PIQ by Age, Patient Sex, Days Post-coma, and Duration of Coma

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| age | 1 | 329.0444 | 329.0444 | 1.4778191 | 0.2249956 |
| Patient\_sex | 1 | 261.0818 | 261.0818 | 1.1725823 | 0.2796716 |
| days | 1 | 203.0431 | 203.0431 | 0.9119166 | 0.3403140 |
| duration | 1 | 2178.8896 | 2178.8896 | 9.7859279 | 0.0019172 |
| Residuals | 326 | 72585.6571 | 222.6554 | NA | NA |

Comparison of Two Linear Models of PIQ

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Residual DF | Residual Sum of Squares | DF | Sum of Squares | F value | p-value |
| 1 | 328 | 74967.59 | NA | NA | NA | NA |
| 2 | 326 | 72585.66 | 2 | 2381.933 | 5.348922 | 0.0051796 |

## 7. FlexDashboard

Flexdashboard available here: <http://rpubs.com/jammirati/259010>

### References

Wong, P. P., Monette, G., and Weiner, N. I. (2001) Mathematical models of cognitive recovery. Brain Injury, 15, 519–530.