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.