

RADPAD Data Analysis

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Resident 1

Observed Difference in Median Dose

Table 1: Median Dose (microSV) Statistics for Resident 1

Procedure	Median NOPAD	Median RADPAD	Difference	Percent Change
BPV	15.44	6.12	-9.32	-60.36
PDA	5.77	2.83	-2.94	-50.91
PMI	18.33	8.75	-9.58	-52.26
PV Stent	92.00	14.81	-77.19	-83.90

ANCOVA Model Analysis of Variance

Table 2: Resident 1 Analysis of Variance

	Sum Sq	Df	F value	Pr(>F)
(Intercept)	57.784	1	47.610	0.000
RADPAD	38.247	1	31.513	0.000
Procedure_Type	17.982	3	4.939	0.002
Weight	22.093	1	18.204	0.000
Time	22.866	1	18.840	0.000
RADPAD:Procedure_Type	7.661	3	2.104	0.101
Residuals	239.096	197	NA	NA

Contrasts

Table 3: Resident 1 RADPAD by Procedure Type Contrast on Log Scale

contrast	Procedure_Type	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	BPV	-1.438	0.256	197	-1.943	-0.933	-5.614	0.000
Y - N	PDA	-0.592	0.343	197	-1.269	0.085	-1.724	0.086
Y - N	PMI	-1.056	0.421	197	-1.886	-0.226	-2.508	0.013
Y - N	PV Stent	-2.006	0.537	197	-3.065	-0.947	-3.735	0.000

Table 4: Resident 1 RADPAD by Procedure Type Contrast, Ratio of Geometric Means

contrast	Procedure_Type	ratio	SE	lower.CL	upper.CL	null	t.ratio	p.value
Y / N	BPV	0.237	0.061	0.143	0.394	1	-5.614	0.000
Y / N	PDA	0.553	0.190	0.281	1.089	1	-1.724	0.086
Y / N	PMI	0.348	0.146	0.152	0.798	1	-2.508	0.013
Y / N	PV Stent	0.135	0.072	0.047	0.388	1	-3.735	0.000

Table 5: Resident 1 RADPAD Contrast on Log Scale

contrast	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	-1.273	0.201	197	-1.669	-0.876	-6.333	0

Table 6: Resident 1 RADPAD Contrast, Ratio of Geometric Means

contrast	ratio	SE	lower.CL	upper.CL	null	t.ratio	p.value
Y / N	0.28	0.056	0.188	0.416	1	-6.333	0

Resident 2

Observed Difference in Median Dose

Table 7: Median Dose (microSV) Statistics for Resident 2

Procedure	Median NOPAD	Median RADPAD	Difference	Percent Change
BPV	1.84	0.52	-1.31	-71.47
PDA	0.88	0.34	-0.53	-60.80
PMI	1.63	0.31	-1.32	-80.98
PV Stent	3.48	3.86	0.38	10.78

ANCOVA Model Analysis of Variance

Table 8: Resident 2 Analysis of Variance

	Sum Sq	Df	F value	Pr(>F)
(Intercept)	6.138	1	3.028	0.084
RADPAD	14.518	1	7.162	0.008
Procedure_Type	7.996	3	1.315	0.271
Weight	65.270	1	32.199	0.000
Time	2.192	1	1.081	0.300
RADPAD:Procedure_Type	11.750	3	1.932	0.126
Residuals	344.609	170	NA	NA

Contrasts

Table 9: Resident 2 RADPAD by Procedure Type Contrast on Box-Cox Scale

contrast	Procedure_Type	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	BPV	-0.903	0.337	170	-1.568	-0.237	-2.676	0.008
Y - N	PDA	-0.975	0.477	170	-1.916	-0.034	-2.046	0.042
Y - N	PMI	-1.185	0.656	170	-2.479	0.109	-1.808	0.072
Y - N	PV Stent	0.792	0.694	170	-0.579	2.163	1.141	0.256

Table 10: Resident 2 RADPAD Contrast on Box-Cox Scale

contrast	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	-0.568	0.279	170	-1.119	-0.016	-2.032	0.044

Faculty

Observed Difference in Median Dose

Table 11: Median Dose (microSV) Statistics for Faculty

Procedure	Median NOPAD	Median RADPAD	Difference	Percent Change
BPV	1.28	0.54	-0.74	-57.81
PDA	0.58	0.11	-0.47	-81.03
PMI	3.62	0.54	-3.08	-85.08
PV Stent	4.64	2.30	-2.34	-50.32

GLS Model Analysis of Variance

Table 12: Faculty Analysis of Variance

	Df	Chisq	Pr(>Chisq)
(Intercept)	1	20.302	0.000
RADPAD	1	6.102	0.014
Procedure_Type	3	8.925	0.030
Weight	1	12.582	0.000
Time	1	22.694	0.000
RADPAD:Procedure_Type	3	0.544	0.909

Contrasts

Table 13: Faculty RADPAD by Procedure Type Contrast on Box-Cox Scale

contrast	Procedure_Type	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	BPV	-0.816	0.330	116.833	-1.469	-0.162	-2.470	0.015
Y - N	PDA	-1.206	0.443	118.383	-2.084	-0.328	-2.719	0.008
Y - N	PMI	-1.009	0.543	112.791	-2.084	0.066	-1.859	0.066
Y - N	PV Stent	-1.122	0.742	182.170	-2.586	0.342	-1.512	0.132

Table 14: Faculty RADPAD Contrast on Box-Cox Scale

contrast	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	-1.038	0.268	148.03	-1.567	-0.509	-3.879	0

TEE

Observed Difference in Median Dose

Table 15: Median Dose (microSV) Statistics for TEE

Procedure	Median NOPAD	Median RADPAD	Difference	Percent Change
BPV	1.66	3.48	1.82	109.64
PDA	2.28	2.05	-0.23	-10.09
PMI	3.92	0.33	-3.59	-91.58
PV Stent	2.36	3.59	1.24	52.65

GLS Model Analysis of Variance

Table 16: TEE Analysis of Variance

	Df	Chisq	Pr(>Chisq)
(Intercept)	1	2.205	0.138
RADPAD	1	1.333	0.248
Procedure_Type	3	3.595	0.309
Weight	1	8.520	0.004
Time	1	0.544	0.461
RADPAD:Procedure_Type	3	4.322	0.229

Contrasts

Table 17: TEE RADPAD by Procedure Type Contrast on Box-Cox Scale

contrast	Procedure_Type	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	BPV	0.702	0.608	55.180	-0.517	1.921	1.154	0.253
Y - N	PDA	-0.194	0.425	41.779	-1.051	0.663	-0.456	0.650
Y - N	PMI	-1.958	1.268	25.195	-4.569	0.653	-1.544	0.135
Y - N	PV Stent	0.521	0.798	52.999	-1.079	2.121	0.653	0.517

Table 18: TEE RADPAD Contrast on Box-Cox Scale

contrast	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	-0.232	0.414	33.582	-1.075	0.61	-0.56	0.579

Anesthesia

Observed Difference in Median Dose

Table 19: Median Dose (microSV) Statistics for Anesthesia

Procedure	Median NOPAD	Median RADPAD	Difference	Percent Change
BPV	4.69	0.05	-4.64	-98.93
PDA	1.77	0.06	-1.70	-96.32
PMI	2.36	0.10	-2.26	-95.75
PV Stent	23.27	0.21	-23.07	-99.12

Gamma GLM Analysis of Variance

Table 20: Anesthesia Analysis of Variance

	LR Chisq	Df	Pr(>Chisq)
RADPAD	84.036	1	0.000
Procedure_Type	9.789	3	0.020
Weight	8.235	1	0.004
Time	9.178	1	0.002
RADPAD:Procedure_Type	6.717	3	0.081

Contrasts

Table 21: Anesthesia RADPAD by Procedure Type Contrast on Log Scale

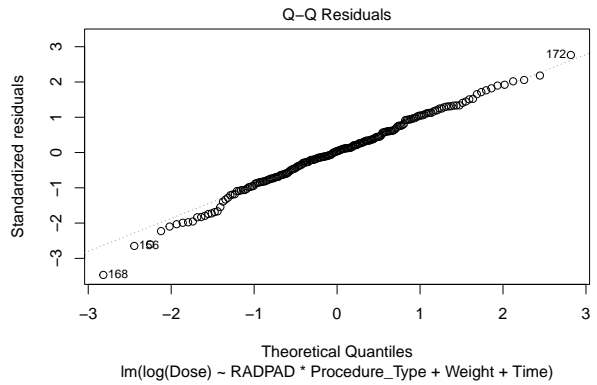
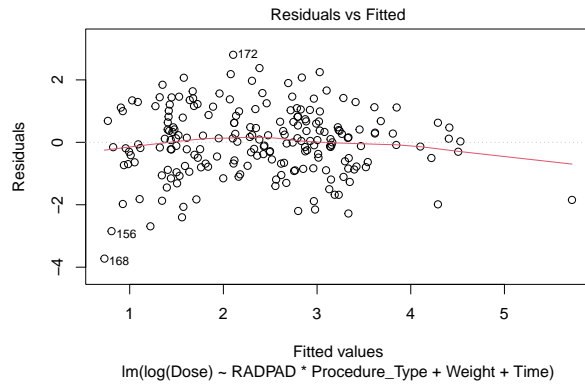
contrast	Procedure_Type	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	BPV	-4.472	0.325	186	-5.114	-3.829	-13.739	0
Y - N	PDA	-3.533	0.432	186	-4.386	-2.681	-8.177	0
Y - N	PMI	-3.048	0.678	186	-4.386	-1.711	-4.497	0
Y - N	PV Stent	-4.719	0.671	186	-6.044	-3.395	-7.030	0

Table 22: Anesthesia RADPAD Contrast on Log Scale

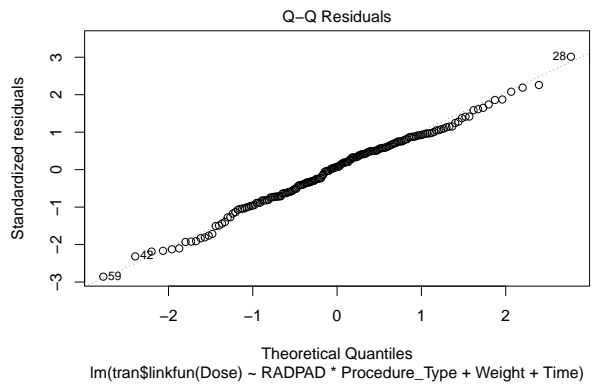
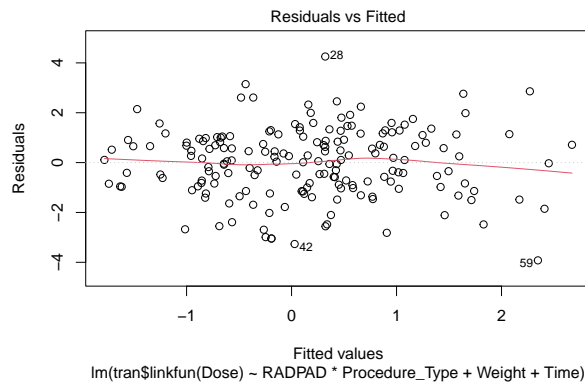
contrast	estimate	SE	df	lower.CL	upper.CL	t.ratio	p.value
Y - N	-3.943	0.274	186	-4.483	-3.403	-14.402	0

Residual Analysis

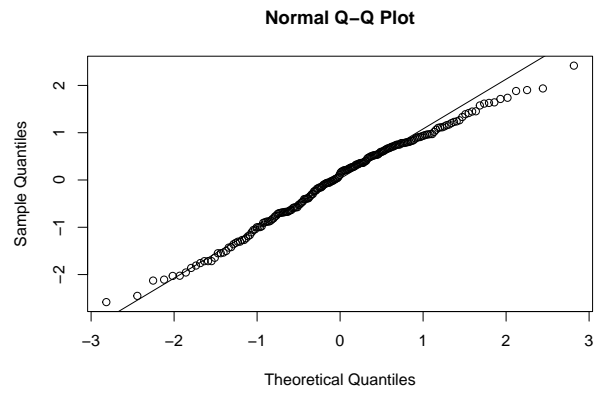
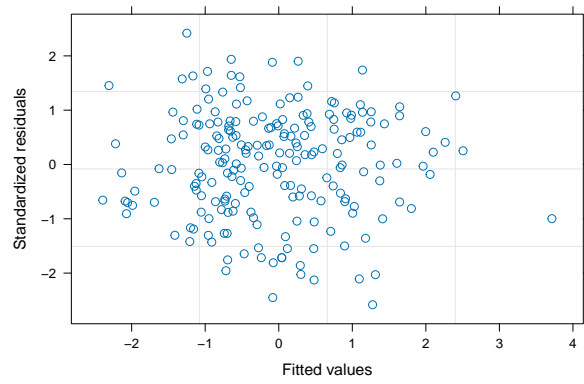
Resident 1



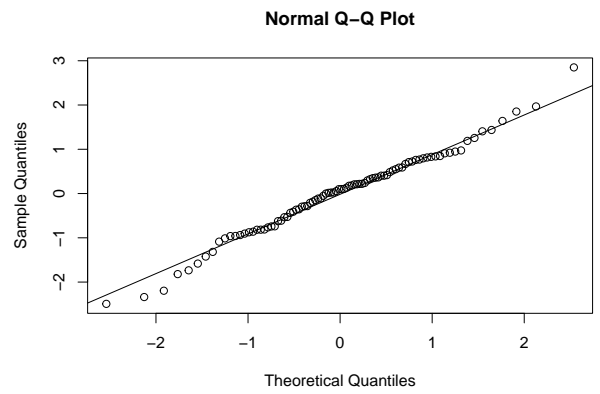
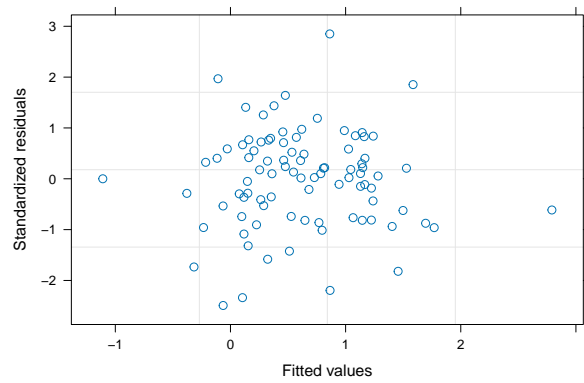
Resident 2



Faculty

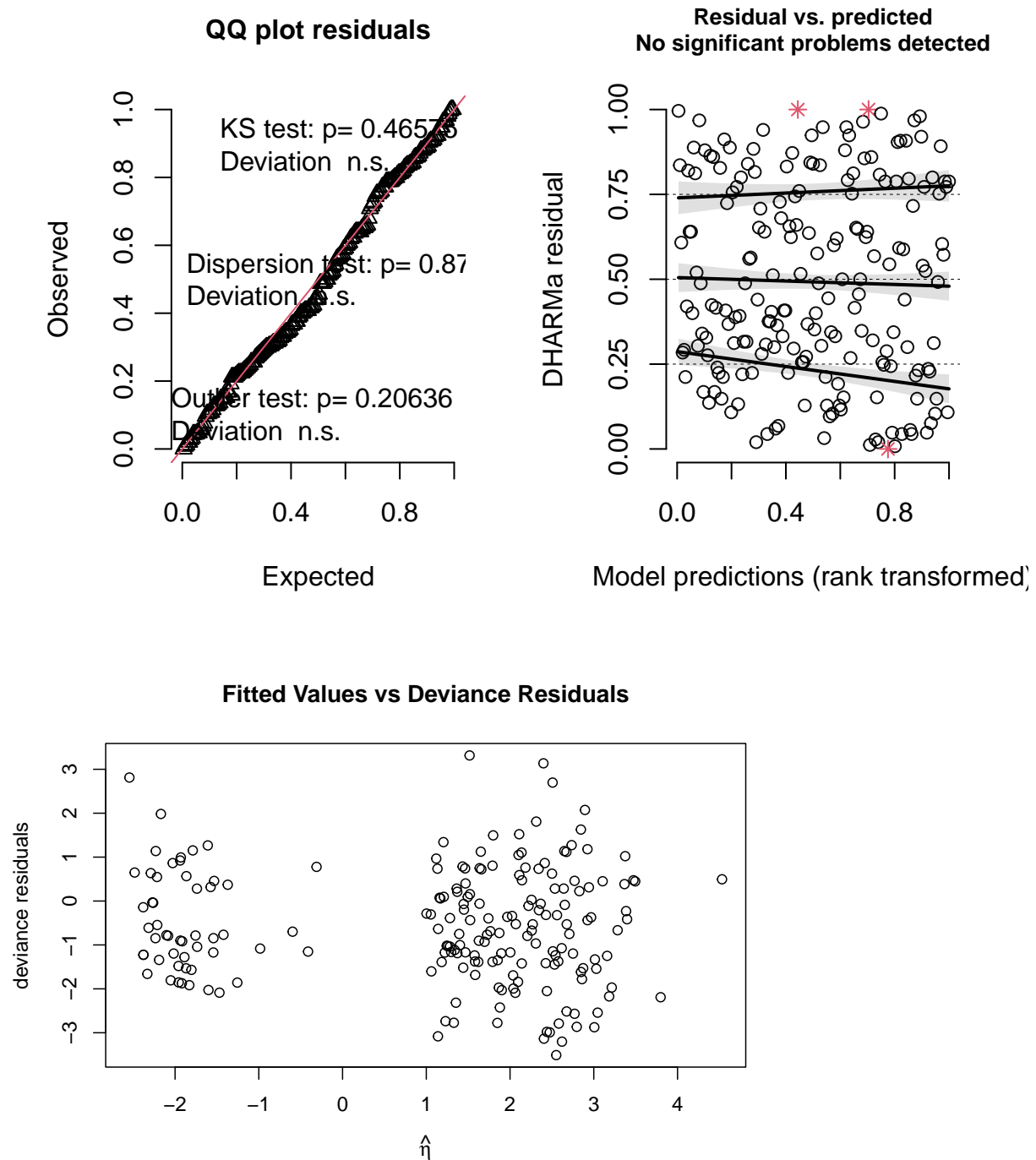


Tee



Anesthesia

DHARMA residual



Numeric Summaries

Dose (microSV)

Lab_Personnel	Procedure_Type	RADPAD	Count	Mean	Median	SD	Min	Max
Anesthesia	BPV	N	72	13.387	4.685	18.280	0.01	84.94
Anesthesia	BPV	Y	24	0.161	0.050	0.306	0.01	1.46
Anesthesia	PDA	N	38	5.997	1.765	14.327	0.01	88.04
Anesthesia	PDA	Y	14	0.139	0.065	0.161	0.01	0.51
Anesthesia	PMI	N	26	4.815	2.355	7.912	0.03	39.45
Anesthesia	PMI	Y	5	0.168	0.100	0.181	0.01	0.44
Anesthesia	PV Stent	N	9	40.408	23.270	46.803	1.39	146.79
Anesthesia	PV Stent	Y	8	0.226	0.205	0.170	0.05	0.57
Faculty	BPV	N	73	3.544	1.280	5.709	0.01	32.81
Faculty	BPV	Y	25	0.999	0.540	1.175	0.02	4.23
Faculty	PDA	N	40	1.857	0.580	3.300	0.01	13.54
Faculty	PDA	Y	14	0.588	0.110	1.424	0.02	5.45
Faculty	PMI	N	28	5.780	3.620	8.515	0.02	44.42
Faculty	PMI	Y	9	1.771	0.540	2.690	0.04	8.60
Faculty	PV Stent	N	9	6.920	4.640	6.291	0.71	20.12
Faculty	PV Stent	Y	8	3.411	2.305	3.765	0.38	11.70
Resident 1	BPV	N	73	30.965	15.440	36.953	2.28	196.00
Resident 1	BPV	Y	25	9.330	6.120	9.876	0.05	38.35
Resident 1	PDA	N	40	11.430	5.765	16.513	0.59	72.00
Resident 1	PDA	Y	14	5.540	2.830	7.739	1.23	31.38
Resident 1	PMI	N	29	25.794	18.330	20.463	1.82	98.66
Resident 1	PMI	Y	9	21.856	8.750	37.307	0.23	116.92
Resident 1	PV Stent	N	9	87.398	92.000	35.524	41.17	136.67
Resident 1	PV Stent	Y	8	30.610	14.810	45.049	0.89	135.56
Resident 2	BPV	N	71	4.131	1.840	6.333	0.02	43.29
Resident 2	BPV	Y	24	2.260	0.525	4.318	0.01	18.45
Resident 2	PDA	N	36	1.473	0.880	2.126	0.08	9.11
Resident 2	PDA	Y	12	0.489	0.345	0.466	0.05	1.36
Resident 2	PMI	N	12	2.221	1.630	1.672	0.52	6.40
Resident 2	PMI	Y	8	0.584	0.310	0.654	0.05	1.92
Resident 2	PV Stent	N	9	4.776	3.480	4.865	0.12	16.25
Resident 2	PV Stent	Y	8	15.078	3.855	23.021	0.51	62.83
TEE	BPV	N	13	4.218	1.660	5.919	0.02	18.74
TEE	BPV	Y	7	2.839	3.480	1.696	0.33	4.50
TEE	PDA	N	36	3.195	2.280	3.325	0.03	12.77
TEE	PDA	Y	12	2.814	2.050	2.870	0.26	8.98
TEE	PMI	N	9	25.231	3.920	63.015	0.08	193.00
TEE	PMI	Y	1	0.330	0.330	NA	0.33	0.33
TEE	PV Stent	N	8	4.803	2.355	6.728	0.54	20.28
TEE	PV Stent	Y	4	11.992	3.595	18.926	0.54	40.24
Tech 1	BPV	N	72	0.136	0.040	0.278	0.00	1.40
Tech 1	BPV	Y	25	0.028	0.000	0.061	0.00	0.26
Tech 1	PDA	N	38	0.093	0.025	0.145	0.00	0.56
Tech 1	PDA	Y	14	0.061	0.025	0.073	0.00	0.20

Tech 1	PMI	N	24	0.302	0.025	0.919	0.00	4.50
Tech 1	PMI	Y	9	0.119	0.000	0.282	0.00	0.85
Tech 1	PV Stent	N	8	0.360	0.060	0.680	0.01	2.00
Tech 1	PV Stent	Y	8	0.162	0.040	0.202	0.00	0.49

Fluoroscopic Time (minutes)

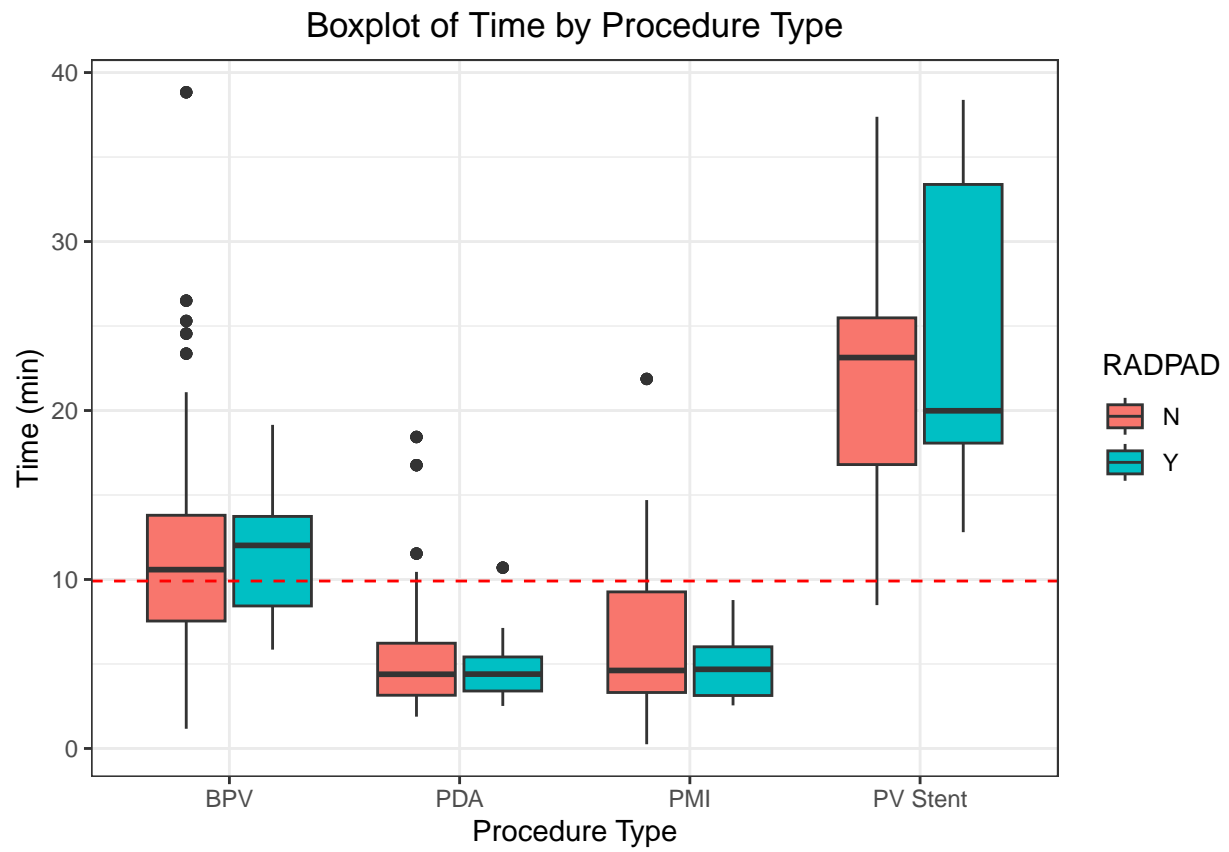
Procedure_Type	RADPAD	Mean	Median	SD	Min	Max
BPV	N	11.702	10.583	6.200	1.167	38.833
BPV	Y	11.635	12.017	3.737	5.850	19.150
PDA	N	5.312	4.392	3.621	1.883	18.433
PDA	Y	4.676	4.400	1.991	2.517	10.700
PMI	N	6.249	4.617	4.723	0.250	21.867
PMI	Y	4.648	4.683	1.701	2.550	8.783
PV Stent	N	21.871	23.133	7.739	8.483	37.383
PV Stent	Y	24.322	19.983	9.617	12.800	38.383

Weight (kilograms)

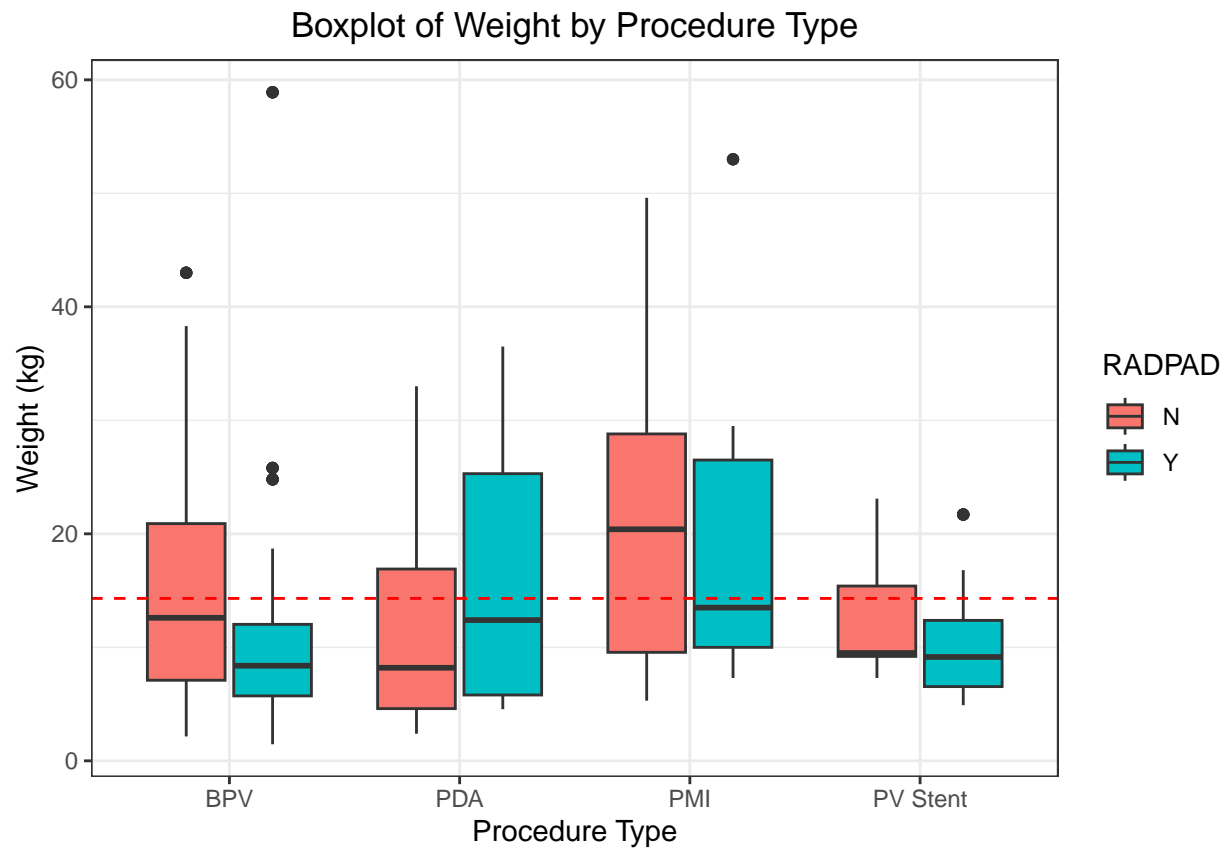
Procedure_Type	RADPAD	Mean	Median	SD	Min	Max
BPV	N	14.224	12.60	9.042	2.15	43.0
BPV	Y	11.790	8.38	11.339	1.46	58.9
PDA	N	11.642	8.20	8.369	2.39	33.0
PDA	Y	15.396	12.40	11.268	4.55	36.5
PMI	N	21.661	20.40	11.978	5.30	49.6
PMI	Y	17.904	13.50	12.585	7.30	53.0
PV Stent	N	13.262	9.50	5.995	7.30	23.1
PV Stent	Y	10.824	9.15	5.488	4.90	21.7

Graphical Summaries

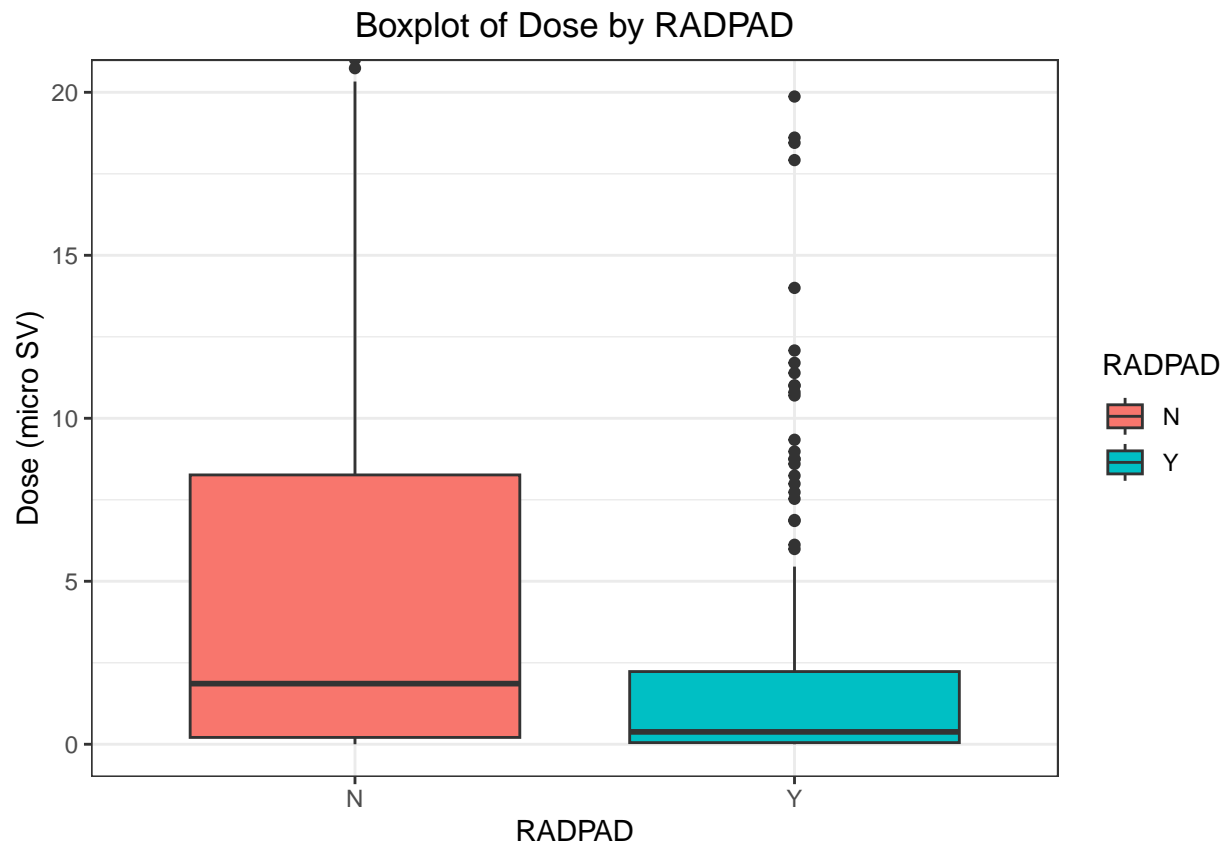
Fluoroscopic Time (minutes)



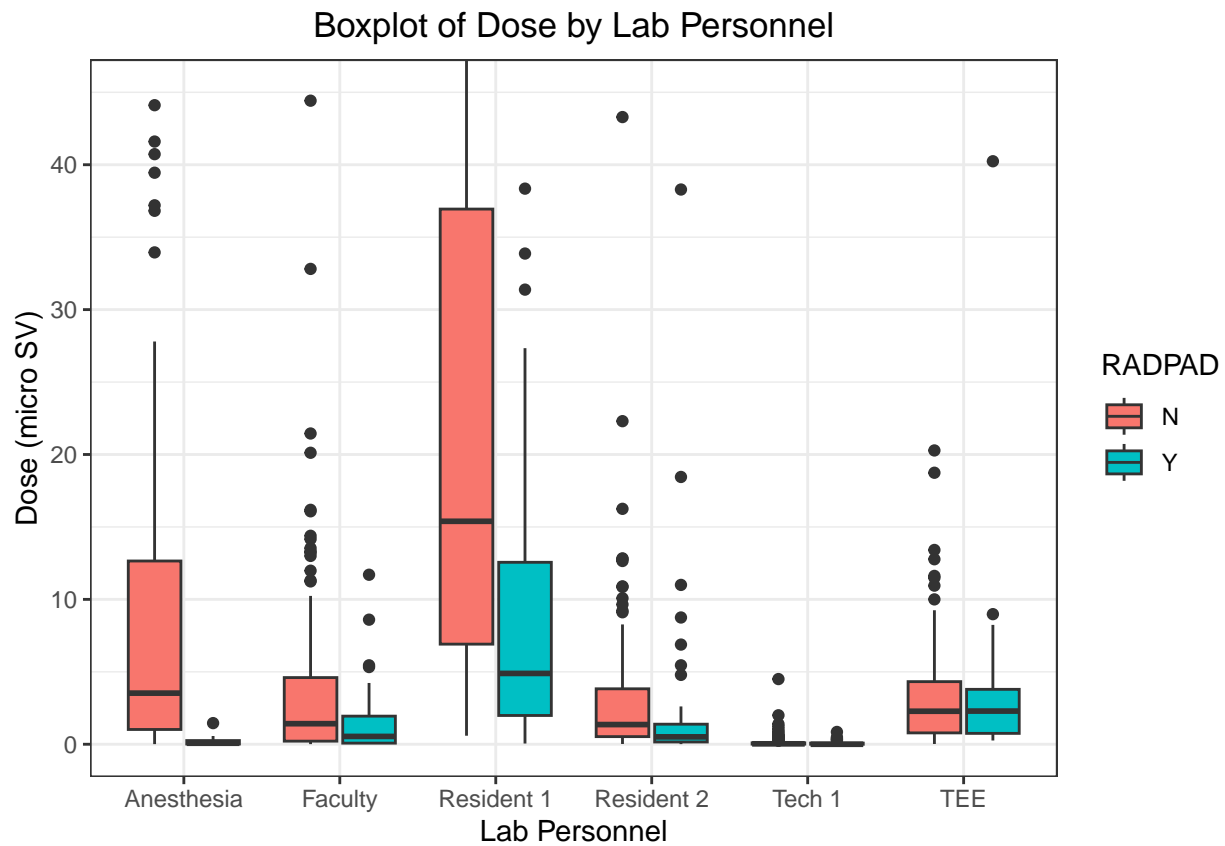
Weight (kilograms)



Dose (micro SV) by RADPAD



Dose (micro SV) by Personnel



Dose (micro SV) by Procedure Type

