1 Numerical Result

Table 1: Variable Selection Results for Example 1 ($\beta = (3, 2, 1.5, 0, 0, 0, 0, 0)'$ with 10% outliers)

Method	CFR (%)	OFR (%)	AN	TIME	CFR (%)	OFR (%)	AN	TIME
		Case A				**Case B**		
ALasso	74	23	3.29	0.9	63	25	3.25	0.97
sLTS	8	91	4.96	3.62	28	72	4.07	3.5
MMNNG	68	25	3.25	691.33	88	12	3.13	682.07
SROS	19	78	4.34	49.36	30	70	4.12	53.2
PAWLS	34	57	3.97	1.13	52	48	3.81	0.89
APAWLS	70	9	2.69	4.71	93	3	2.93	4.58
		Case C				**Case D**		
ALasso	3	2	1.94	0.85	0	19	2.52	1.19
sLTS	7	93	5.21	3.95	11	89	5.05	3.99
MMNNG	72	12	2.95	673.93	63	16	3.25	682.47
SROS	50	42	3.57	49.32	3	84	4.9	49.3
PAWLS	54	46	3.75	0.87	90	9	3.28	1.43
APAWLS	73	10	2.79	4.64	88	0	2.87	5.23
		Case E						
ALasso	0	17	4.05	0.98				
sLTS	3	97	5.03	3.86				
MMNNG	79	12	3.08	484.67				
PAWLS	54	46	3.7	1.06				
APAWLS	68	8	2.64	4.57				

Table 2: Variable Selection Results for Example 1 ($\beta = (3, 2, 1.5, 0, 0, 0, 0, 0)'$ with 20% outliers)

Method	CFR (%)	OFR (%)	AN	TIME	CFR (%)	OFR (%)	AN	TIME
		Case C				**Case D**		
ALasso	1	2	1.22	1.03	1	4	1.68	1.57
sLTS	2	98	5.4	4.96	5	95	5.35	5.53
MMNNG	65	5	2.76	470.24	31	33	3.96	473.42
PAWLS	52	47	3.67	0.94	91	6	3.2	1.64
PAWLS	75	7	2.71	4.88	88	0	2.86	5.96
		Case E						
ALasso	0	12	2.73	0.98				
sLTS	6	93	5.13	6.04				
MMNNG	56	6	2.72	457.01				
PAWLS	53	32	3.36	1.45				
APAWLS	52	2	2.3	4.45				

Table 3: Variable Selection Results for Example 1 ($\beta = (3, 2, 1.5, 0, 0, 0, 0, 0)'$ with 30% outliers)

Method	CFR (%)	OFR (%)	AN	TIME	CFR (%)	OFR (%)	AN	TIME
		Case C				**Case D**		
ALasso	2	0	0.68	1	0	3	0.96	1.75
sLTS	0	75	6.91	6.41	0	96	6.57	6.47
MMNNG	38	1	2.3	465.41	5	41	4.29	477.06
PAWLS	62	35	3.44	1.02	76	21	3.73	1.76
APAWLS	74	3	2.63	4.78	84	0	2.82	6.93
		Case E						
ALasso	1	8	2.25	0.97				
sLTS	0	85	6.21	5.89				
MMNNG	26	8	2.43	459.79				
PAWLS	44	19	2.98	1.71				
PAWLS	32	2	2.07	4.53				

Table 4: Variable Selection Results for Example 2 ($\beta = (3, 2, 1.5, 0, 0, 0, 0, 0)'$)

Method	CFR (%)	OFR (%)	AN	TIME	CFR (%)	OFR (%)	AN	TIME
		Case A				**Case B**		
ALasso	97	0	9.96	3.4	84	1	9.75	3.41
sLTS	0	73	32.66	1686.47	1	86	24.93	1621.8
PAWLS	71	19	9.52	197.74	76	3	8.15	215.55
		Case C				**Case D**		
ALasso	0	0	6.25	4.07	0	1	6.89	4.07
sLTS	0	91	32.11	1928.42	0	92	31.98	1861.67
PAWLS	62	16	8.54	231.28	65	14	8.67	240.65
		Case E						
ALasso	0	0	12.18	4.06				
sLTS	0	95	30.17	1865.4				
PAWLS	23	13	6.47	249.22				

Table 5: Outlier Detection Evaluation in Example 1 and 2 with 10% outliers

		sLTS			PAWLS		
	Model	M (%)	S (%)	JD(%)	M (%)	S (%)	JD(%)
Example 1	Case A	0	0.06	1	0	0.1	1
	Case B	0	0.09	1	0	0.05	1
	Case C	0	0.02	1	0	0.01	1
	Case D	0	0.02	1	0	0	1
	Case E	0.02	0.03	0.89	0.06	0.02	0.77
Example 2	Case A	0	0.21	1	0	0.04	1
	Case B	0	0.16	1	0	0.09	1
	Case C	0	0.13	0.99	0.02	0.05	0.88
	Case D	0	0.14	0.99	0.02	0.05	0.88
	Case E	0.06	0.12	0.49	0.29	0.12	0.07

Table 6: Outlier Detection Evaluation in Example 1 and 2 with 20% outliers

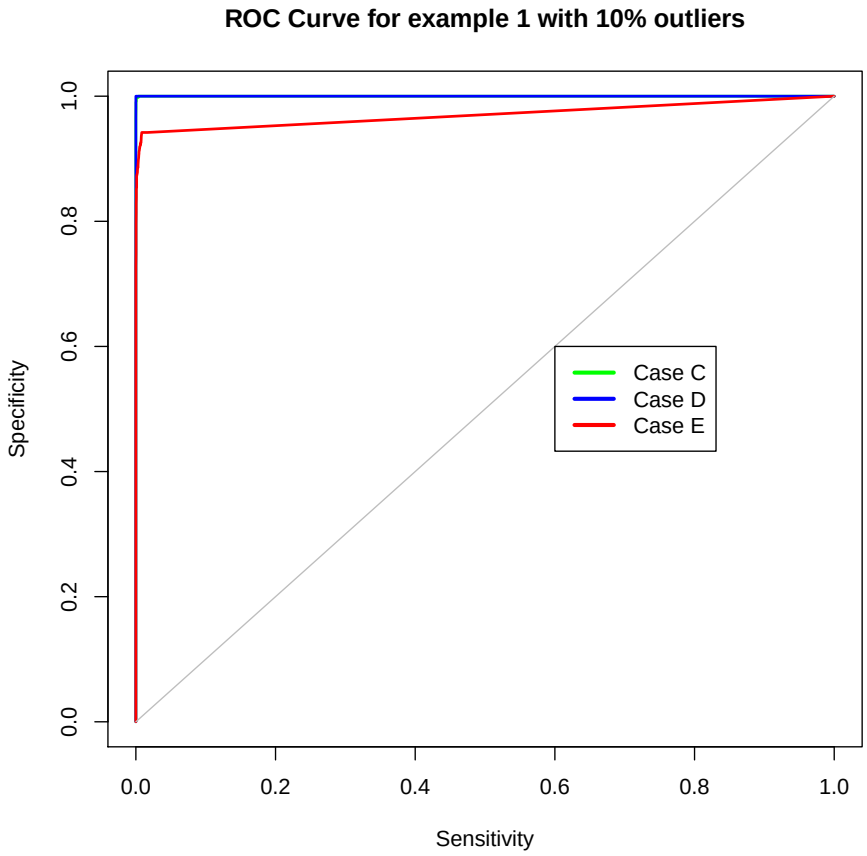
		sLTS			PAWLS		
	Model	M (%)	S (%)	JD(%)	M (%)	S (%)	JD(%)
Example 1	Case C	0	0.01	1	0	0.01	1
	Case D	0.01	0.01	0.99	0	0	1
	Case E	0.02	0.01	0.83	0.09	0.01	0.44

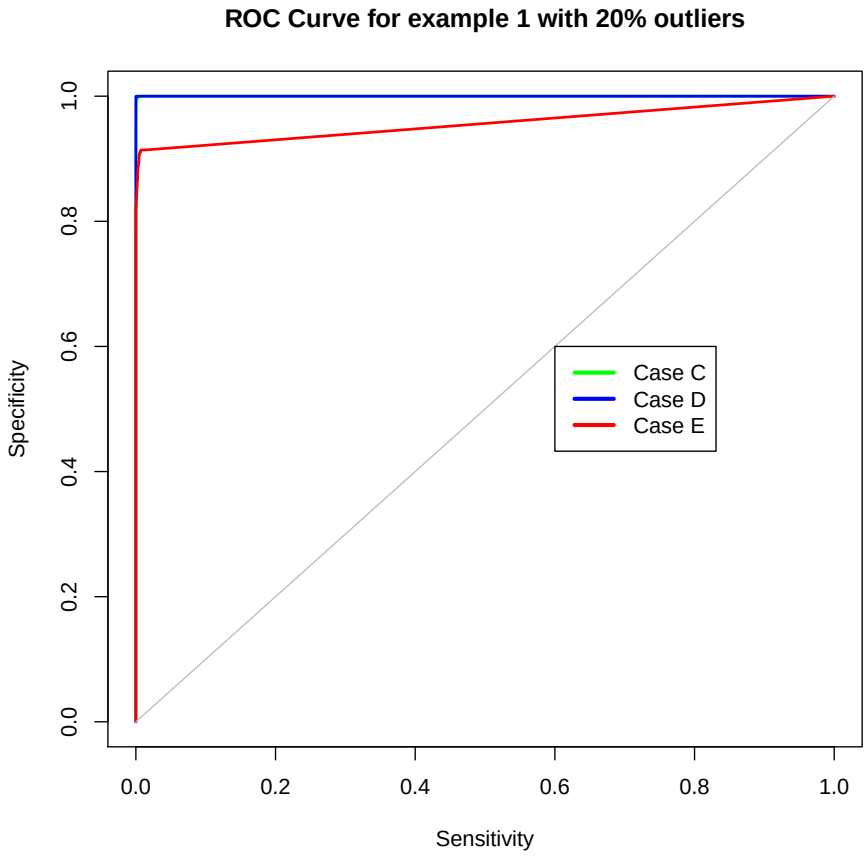
Table 7: Outlier Detection Evaluation in Example 1 and 2 with 30% outliers

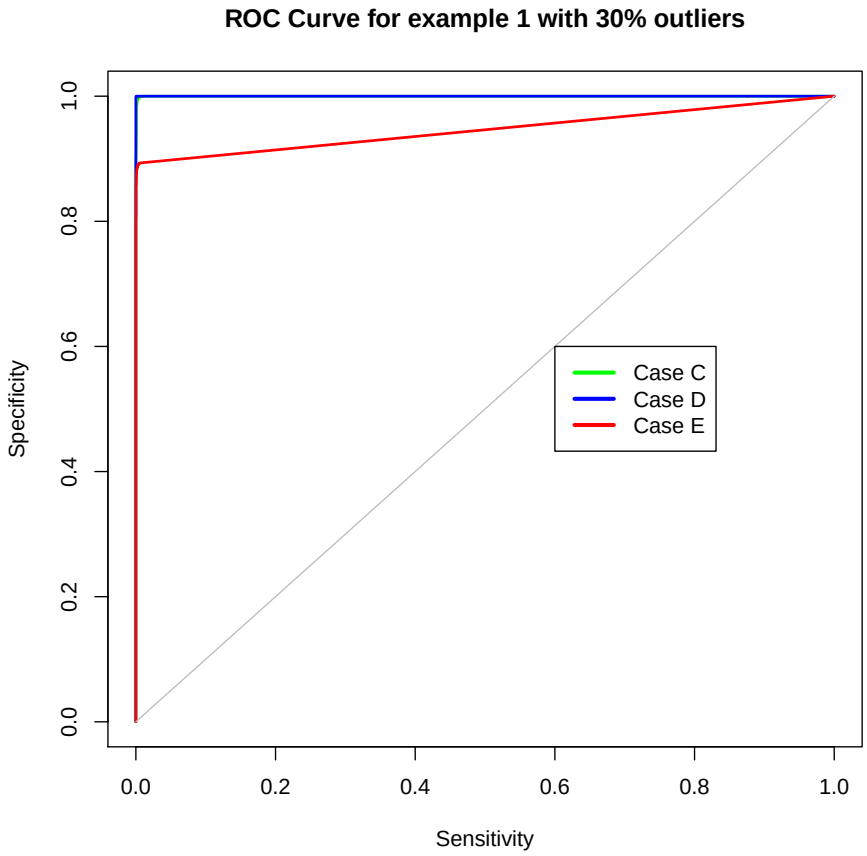
		sLTS			PAWLS		
	Model	M (%)	S (%)	JD(%)	M (%)	S (%)	JD(%)
Example 1	Case C	0.21	0	0	0	0.01	1
	Case D	0.45	0.02	0	0	5.71×10^{-4}	1
	Case E	0.21	0	0	0.11	0.01	0.3

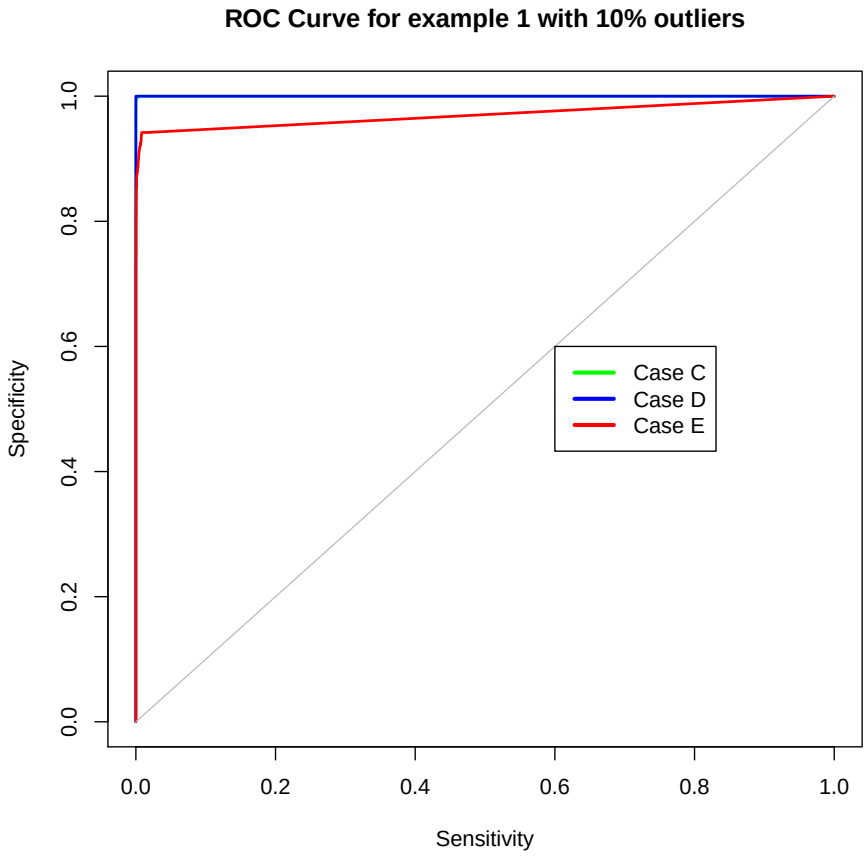
Table 8: Outlier Detection Evaluation in Example 1

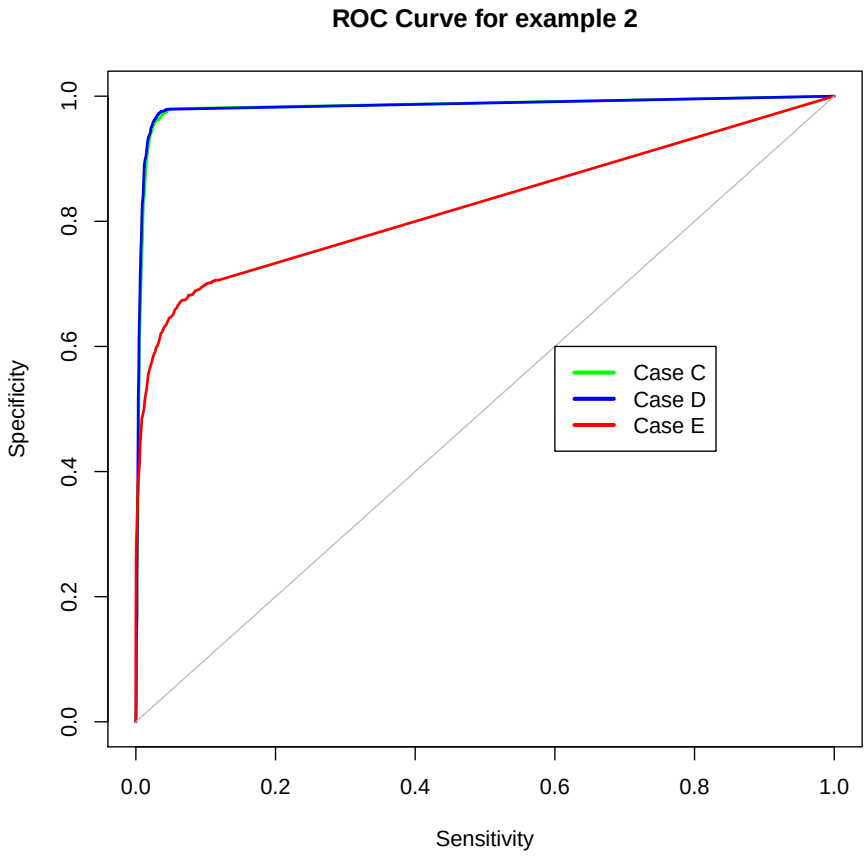
		IPOD			PAWLS		
	Model	M (%)	S (%)	JD(%)	M (%)	S (%)	JD(%)
Example 1	Case A	0	0	1	0	0.1	1
	Case B	0	0.1	1	0	0.05	1
	Case C	0	0.08	1	0	0.01	1
	Case D	0.49	0.02	0.07	0	0	1
	Case E	0.22	0.05	0.31	0.06	0.02	0.77


ROC Curve for example 1 with 10% outliers
Specificity
Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
Case C
Case D
Case E


ROC Curve for example 1 with 20% outliers
Specificity
Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
Case C
Case D
Case E


ROC Curve for example 1 with 30% outliers
Specificity
Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
Case C
Case D
Case E


ROC Curve for example 1 with 10% outliers
Specificity
Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
Case C
Case D
Case E


ROC Curve for example 2
Specificity
Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
Case C
Case D
Case E