SHEET1

Binary Logistic Regression: NObeyesdad versus Weight, FCVC, CH2O, FAF,...

*** WARNING * When the data are in the Response/Frequency format, the Residuals versus fits plot is unavailable.**

Method

Link function	Logit
Categorical predictor coding	(1, 0)
Rows used	2111

Response Information

Variable	Value	Count
NObeyesdad	1	1824 (Event)
	0	287
	Total	2111

Regression Equation

P(1) = exp(Y')/(1 + exp(Y'))

FAVC	CAEC	SMOKE			
no	Always	no	Y'	=	-5.991 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	Always	yes	Y'	=	-7.382 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	Frequently	no	Y'	=	-3.701 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	Frequently	yes	Y'	=	-5.092 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	no	no	Y'	=	-3.704 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	no	yes	Y'	=	-5.095 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	Sometimes	no	Y'	=	-3.346 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
no	Sometimes	yes	Y'	=	-4.736 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	Always	no	Y'	=	-5.439 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	Always	yes	Y'	=	-6.830 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	Frequently	no	Y'	=	-3.149 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O

					- 0.3304 FAF
yes	Frequently	yes	Y'	=	-4.540 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	no	no	Y'	=	-3.152 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	no	yes	Y'	=	-4.543 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	Sometimes	no	Y'	=	-2.794 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF
yes	Sometimes	yes	Y'	=	-4.184 + 0.05491 Weight + 0.2998 FCVC + 0.2996 CH2O - 0.3304 FAF

Coefficients

Term	Coef	SE Coef	Z-Value	P-Value	VIF
Constant	-5.991	0.616	-9.72	0.000	
Weight	0.05491	0.00460	11.95	0.000	1.20
FCVC	0.300	0.137	2.19	0.028	1.08
CH2O	0.300	0.129	2.32	0.020	1.18
FAF	-0.3304	0.0833	-3.97	0.000	1.09
FAVC					
yes	0.552	0.178	3.09	0.002	1.05
CAEC					
Frequently	2.290	0.373	6.14	0.000	4.96
no	2.287	0.504	4.54	0.000	1.79
Sometimes	2.646	0.345	7.66	0.000	5.02
SMOKE					
yes	-1.391	0.436	-3.19	0.001	1.02

Odds Ratios for Continuous Predictors

	Odds Ratio	95% CI
Weight	1.0564	(1.0470, 1.0660)
FCVC	1.3496	(1.0323, 1.7644)
CH2O	1.3493	(1.0474, 1.7383)
FAF	0.7187	(0.6104, 0.8461)

Odds Ratios for Categorical Predictors

Level A	Level B	Odds Ratio	95% CI
FAVC			
yes	no	1.7364	(1.2241, 2.4631)
CAEC			
Frequently	Always	9.8749	(4.7541, 20.5113)
no	Always	9.8482	(3.6654, 26.4601)
Sometimes	Always	14.0918	(7.1623, 27.7254)
no	Frequently	0.9973	(0.4397, 2.2622)
Sometimes	Frequently	1.4270	(0.9902, 2.0565)
Sometimes	no	1.4309	(0.6634, 3.0863)
SMOKE			

yes	no	0.2489	(0.1058, 0.5856)

Odds ratio for level A relative to level B

Model Summary

Deviance R-Sq	Deviance R-Sq(adj)	AIC	AICc	BIC	Area Under ROC Curve
27.41%	26.88%	1238.36	1238.47	1294.91	0.8653

Goodness-of-Fit Tests

Test	DF	Chi-Square	P-Value
Deviance	2101	1218.36	1.000
Pearson	2101	1304.62	1.000
Hosmer-Lemeshow	8	86.96	0.000

Analysis of Variance

		Wald Test	
Source	DF	Chi-Square	P-Value
Regression	9	271.98	0.000
Weight	1	142.73	0.000
FCVC	1	4.81	0.028
CH2O	1	5.37	0.020
FAF	1	15.73	0.000
FAVC	1	9.57	0.002
CAEC	3	59.85	0.000
SMOKE	1	10.15	0.001

Fits and Diagnostics for Unusual Observations

Obs	Observed Probability	Fit	Resid	Std Resid		
2	0.0000	0.2986	-0.8422	-0.86		X
9	0.0000	0.8686	-2.0147	-2.02	R	
16	0.0000	0.1781	-0.6263	-0.63		X
19	1.0000	0.7616	0.7380	0.75		X
22	1.0000	0.8901	0.4827	0.49		X
25	0.0000	0.8946	-2.1214	-2.12	R	
26	0.0000	0.1054	-0.4720	-0.48		X
29	0.0000	0.8684	-2.0139	-2.02	R	
33	0.0000	0.8803	-2.0606	-2.07	R	
44	0.0000	0.5221	-1.2152	-1.25		X
45	0.0000	0.7165	-1.5877	-1.62		X
47	0.0000	0.7928	-1.7743	-1.79		X
48	0.0000	0.7928	-1.7743	-1.79		X
51	0.0000	0.8805	-2.0612	-2.07	R	
54	0.0000	0.5384	-1.2434	-1.27		X
55	0.0000	0.1378	-0.5445	-0.55		X
57	0.0000	0.8753	-2.0407	-2.04	R	
59	0.0000	0.8863	-2.0852	-2.09	R	
63	0.0000	0.8102	-1.8229	-1.84		X
67	1.0000	0.5990	1.0124	1.03		X

68	1.0000	0.7263	0.7998	0.81		X
69	1.0000	0.9246	0.3961	0.40		X
70	0.0000	0.7482	-1.6608	-1.69		X
71	1.0000	0.5380	1.1135	1.13		X
72	1.0000	0.5446	1.1024	1.13		X
76	1.0000	0.5653	1.0680	1.08		X
77	1.0000	0.4098	1.3356	1.36		X
83	1.0000	0.6116	0.9916	1.01		X
84	1.0000	0.4761	1.2182	1.25		X
87	0.0000	0.9293	-2.3019	-2.31	R	
91	1.0000	0.4142	1.3276	1.36		X
92	0.0000	0.2732	-0.7989	-0.81		X
94	0.0000	0.1554	-0.5811	-0.59		X
101	0.0000	0.8658	-2.0043	-2.01	R	
108	1.0000	0.5991	1.0123	1.03		X
111	0.0000	0.9439	-2.4003	-2.40	R	
120	1.0000	0.5545	1.0860	1.12		X
121	1.0000	0.6850	0.8698	0.89		X
124	0.0000	0.8863	-2.0852	-2.09	R	
126	1.0000	0.5380	1.1135	1.13		X
128	0.0000	0.8832	-2.0725	-2.08	R	
129	0.0000	0.8691	-2.0167	-2.02	R	
133	0.0000	0.5007	-1.1786	-1.21		X
134	0.0000	0.3436	-0.9176	-0.93		X
137	0.0000	0.8837	-2.0745	-2.08	R	
138	1.0000	0.7604	0.7401	0.76		X
139	0.0000	0.2562	-0.7694	-0.78		X
142	0.0000	0.2734	-0.7992	-0.81		X
143	1.0000	0.7618	0.7376	0.75		X
146	1.0000	0.8652	0.5380	0.54		X
149	0.0000	0.3563	-0.9387	-0.95		X
151	0.0000	0.8836	-2.0741	-2.08	R	
153	1.0000	0.0881	2.2040	2.23	R	X
161	0.0000	0.4392	-1.0755	-1.11		X
163	0.0000	0.0631	-0.3611	-0.36		X
167	0.0000	0.3684	-0.9586	-0.98		X
175	1.0000	0.8652	0.5380	0.54		X
177	0.0000	0.1262	-0.5194	-0.52		X
178	0.0000	0.8777	-2.0499	-2.06	R	
179	0.0000	0.7130	-1.5802	-1.62		X
180	1.0000	0.8652	0.5380	0.54		X
184	1.0000	0.5023	1.1735	1.21		X
185	1.0000	0.8652	0.5380	0.54		X
192	1.0000	0.6661	0.9015	0.92		X
194	0.0000	0.7048	-1.5621	-1.57		X
201	1.0000	0.7840	0.6977	0.71		X
202	1.0000	0.4632	1.2407	1.26		X
203	1.0000	0.9318	0.3758	0.38		X
206	1.0000	0.7245	0.8028	0.82		X
208	0.0000	0.7637	-1.6985	-1.72		X
216	0.0000	0.9452	-2.4101	-2.41	R	
217	0.0000	0.5660	-1.2921	-1.30		X
218	1.0000	0.7159	0.8175	0.83		X
219	0.0000	0.2469	-0.7531	-0.76		X
223	0.0000	0.5026	-1.1818	-1.20		X
232	0.0000	0.7752	-1.7277	-1.76		X
233	0.0000	0.2987	-0.8425	-0.86		X
235	0.0000	0.5191	-1.2101	-1.23		X

236	0.0000	0.6632	-1.4754	-1.50		X
237	0.0000	0.0918	-0.4388	-0.44		X
240	0.0000	0.7630	-1.6969	-1.72		X
241	0.0000	0.8747	-2.0382	-2.04	R	
243	0.0000	0.2638	-0.7827	-0.79		X
244	1.0000	0.9183	0.4128	0.42		X
246	1.0000	0.2301	1.7142	1.75		X
247	0.0000	0.9088	-2.1884	-2.19	R	
248	0.0000	0.4785	-1.1410	-1.15		X
249	0.0000	0.3365	-0.9058	-0.92		X
253	1.0000	0.7454	0.7667	0.78		X
256	1.0000	0.7330	0.7882	0.80		X
263	0.0000	0.8719	-2.0275	-2.03	R	
264	1.0000	0.4180	1.3209	1.33		X
265	0.0000	0.8805	-2.0614	-2.07	R	
266	1.0000	0.3857	1.3803	1.39		X
269	0.0000	0.1827	-0.6353	-0.64		X
270	0.0000	0.8838	-2.0748	-2.08	R	
274	0.0000	0.8752	-2.0402	-2.05	R	
278	0.0000	0.0664	-0.3706	-0.37		X
281	0.0000	0.5898	-1.3349	-1.37		X
286	1.0000	0.7730	0.7176	0.73		X
299	0.0000	0.8950	-2.1230	-2.13	R	
301	0.0000	0.6361	-1.4219	-1.46		X
303	1.0000	0.1033	2.1309	2.15	R	X
304	0.0000	0.1751	-0.6204	-0.63		X
307	0.0000	0.2234	-0.7111	-0.72		X
309	0.0000	0.4542	-1.1005	-1.12		X
312	0.0000	0.1386	-0.5462	-0.55		X
313	0.0000	0.6327	-1.4154	-1.43		X
314	0.0000	0.1424	-0.5542	-0.56		X
316	0.0000	0.4287	-1.0582	-1.07		X
318	0.0000	0.9019	-2.1547	-2.16	R	
321	0.0000	0.3561	-0.9383	-0.95		X
322	0.0000	0.6513	-1.4516	-1.47		X
333	0.0000	0.8996	-2.1441	-2.15	R	
334	0.0000	0.1082	-0.4786	-0.48		X
336	1.0000	0.3857	1.3803	1.39		X
337	0.0000	0.8780	-2.0514	-2.05	R	
341	0.0000	0.9112	-2.2004	-2.20	R	
346	0.0000	0.1288	-0.5251	-0.53		X
351	0.0000	0.6002	-1.3540	-1.37		X
352	0.0000	0.1348	-0.5382	-0.54		X
353	0.0000	0.5138	-1.2009	-1.21		X
364	0.0000	0.8944	-2.1206	-2.12	R	
365	1.0000	0.4553	1.2544	1.27		X
366	0.0000	0.9197	-2.2460	-2.25	R	
372	1.0000	0.3817	1.3879	1.41		X
380	0.0000	0.9275	-2.2907	-2.29	R	
387	0.0000	0.4585	-1.1076	-1.12		X
391	1.0000	0.2323	1.7087	1.73		X
396	1.0000	0.3220	1.5054	1.52		X
402	0.0000	0.4829	-1.1485	-1.17		X
409	0.0000	0.9235	-2.2673	-2.27	R	
413	0.0000	0.9158	-2.2245	-2.23	R	
415	1.0000	0.8367	0.5972	0.60		X
416	0.0000	0.9086	-2.1877	-2.19	R	
428	0.0000	0.6570	-1.4629	-1.49		X

435	0.0000	0.8624	-1.9917	-2.00	R	
438	0.0000	0.1830	-0.6358	-0.64		X
443	0.0000	0.8780	-2.0514	-2.05	R	
446	0.0000	0.3978	-1.0071	-1.01		X
447	0.0000	0.8994	-2.1434	-2.15	R	
451	0.0000	0.9066	-2.1776	-2.18	R	
453	0.0000	0.7156	-1.5858	-1.62		X
459	0.0000	0.1714	-0.6131	-0.62		X
463	1.0000	0.6437	0.9387	0.95		X
465	0.0000	0.3938	-1.0006	-1.02		X
474	0.0000	0.4800	-1.1436	-1.15		X
480	0.0000	0.5411	-1.2481	-1.26		X
486	0.0000	0.1790	-0.6281	-0.64		X
487	0.0000	0.8996	-2.1441	-2.15	R	
489	0.0000	0.9505	-2.4522	-2.45	R	
492	0.0000	0.5295	-1.2280	-1.26		X
495	0.0000	0.9112	-2.2008	-2.20	R	
496	0.0000	0.2797	-0.8101	-0.82		X
516	1.0000	0.5512	1.0914	1.10		X
531	1.0000	0.3208	1.5079	1.52		X
548	1.0000	0.4726	1.2243	1.23		X
574	1.0000	0.5024	1.1733	1.18		X
575	1.0000	0.4652	1.2371	1.25		X
576	1.0000	0.4105	1.3344	1.34		X
603	1.0000	0.5287	1.1290	1.14		X
614	1.0000	0.5311	1.1249	1.13		X
623	1.0000	0.4855	1.2021	1.21		X
628	1.0000	0.6057	1.0013	1.01		X
632	1.0000	0.4112	1.3333	1.35		X
667	1.0000	0.4887	1.1967	1.21		X
684	1.0000	0.4831	1.2062	1.21		X
712	1.0000	0.3895	1.3733	1.39		X
726	1.0000	0.3737	1.4031	1.41		X
747	1.0000	0.8416	0.5872	0.59		X
750	1.0000	0.8019	0.6645	0.67		X
759	1.0000	0.8535	0.5629	0.57		X
763	1.0000	0.8859	0.4921	0.50		X
764	1.0000	0.8652	0.5380	0.54		X
765	1.0000	0.8652	0.5380	0.54		X
771	1.0000	0.8401	0.5903	0.60		X
806	1.0000	0.8435	0.5835	0.59		X
807	1.0000	0.8416	0.5874	0.59		X
810	1.0000	0.8268	0.6169	0.62		X
811	1.0000	0.8211	0.6279	0.63		X
825	1.0000	0.8652	0.5380	0.54		X
831	1.0000	0.8652	0.5380	0.54		X
832	1.0000	0.8652	0.5380	0.54		X
833	1.0000	0.8652	0.5380	0.54		X
834	1.0000	0.8652	0.5380	0.54		X
835	1.0000	0.8652	0.5380	0.54		X
845	1.0000	0.8461	0.5782	0.58		X
846	1.0000	0.8208	0.6284	0.64		X
896	1.0000	0.8644	0.5399	0.54		X
897	1.0000	0.8655	0.5375	0.54		X
901	1.0000	0.7963	0.6750	0.68		X
914	1.0000	0.8525	0.5650	0.57		X
915	1.0000	0.8618	0.5455	0.55		X
921	1.0000	0.8727	0.5218	0.53		X

922	1.0000	0.8652	0.5380	0.54	X
923	1.0000	0.8652	0.5380	0.54	X
924	1.0000	0.8652	0.5380	0.54	X
931	1.0000	0.8426	0.5852	0.59	X
932	1.0000	0.8292	0.6120	0.62	X
959	1.0000	0.8625	0.5439	0.55	X

R Large residual
X Unusual X