STAT 615 (Baron)

Influential Data Analysis and Outliers

```
DATA C;
INFILE forest;
INPUT AGE HD N MDBH;

PROC REG DATA=C LINEPRINTER;
MODEL MDBH = HD AGE N / INFLUENCE R;

PAINT COOKD.>0.15;
PLOT   RSTUDENT.*PREDICTED.   COOKD.*MDBH;

REWEIGHT RSTUDENT.>5 OR RSTUDENT.<-5 / WEIGHT=0.25;
REWEIGHT COOKD. > 0.05 / WEIGHT=0.5;
REWEIGHT COOKD. > 0.10 / WEIGHT=0;

REFIT;  PRINT;       run;
```

The REG Procedure
Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	5.07300	0.52784	9.61	<.0001
HD	1	0.09968	0.01873	5.32	<.0001
AGE	1	-0.09741	0.05244	-1.86	0.0817
N	1	-0.00290	0.00062451	-4.64	0.0003

Output Statistics

(e_i = Residual, r_i = Student Residual, $t_{i(-i)}$ = RStudent, h_{ii} = Hat Diag H)

Obs	Dependent Variable	Predicted Value	Std Error Mean Predict	Residual	Std Error Residual	Student Residual	-2-1 0 1 2	Cook's D	RStudent	Hat Diag H	Cov Ratio	DFFITS
1	7.0000	6.9058	0.1451	0.0942	0.300	0.314	| |	0.006	0.3048	0.1892	1.5576	0.1472
2	5.0000	5.2162	0.1763	-0.2162	0.283	-0.764	*| |	0.057	-0.7531	0.2795	1.5488	0.4691
3	6.2000	5.7748	0.1391	0.4252	0.303	1.403	| **	0.104	1.4501	0.1739	0.9272	0.6653
4	5.2000	5.6244	0.1716	-0.4244	0.286	-1.484	*| |	0.198	-1.5473	0.2647	0.9737	0.9283
5	6.2000	6.1862	0.1312	0.0138	0.307	0.0449	| |	0.000	0.0435	0.1547	1.5308	0.0186
6	5.2000	5.1056	0.1740	0.0944	0.285	0.332	| |	0.010	0.3223	0.2723	1.7304	0.1971
7	6.2000	6.3933	0.0980	-0.1933	0.319	-0.606	*| |	0.009	-0.5939	0.0864	1.2911	0.1826
8	6.4000	6.1704	0.1134	0.2296	0.314	0.732	| *	0.018	0.7211	0.1157	1.2773	0.2608
9	6.4000	6.5881	0.1892	-0.1881	0.275	-0.685	*| |	0.056	-0.6731	0.3219	1.6949	0.4638
10	6.4000	6.9782	0.1309	-0.5782	0.307	-1.885	***| |	0.162	-2.0690	0.1540	0.5605	0.8827
11	5.4000	5.2048	0.1495	0.1952	0.298	0.655	| *	0.027	0.6425	0.2010	1.4536	0.3223
12	6.4000	6.5451	0.1773	-0.1451	0.283	-0.514	*| |	0.026	-0.5014	0.2825	1.6881	0.3146
13	5.4000	5.7041	0.1542	-0.3041	0.296	-1.028	**| |	0.072	-1.0304	0.2138	1.2525	0.5374
14	6.7000	6.8622	0.1083	-0.1622	0.315	-0.514	*| |	0.008	-0.5022	0.1055	1.3539	0.1725
15	6.7000	6.8822	0.1080	-0.1822	0.316	-0.577	*| |	0.010	-0.5649	0.1049	1.3294	0.1934
16	5.9000	5.6869	0.1515	0.2131	0.297	0.717	| *	0.033	0.7057	0.2062	1.4311	0.3597
17	6.9000	6.9995	0.1419	-0.0995	0.302	-0.330	| |	0.006	-0.3203	0.1811	1.5383	0.1506
18	6.9000	6.4114	0.0892	0.4886	0.321	1.520	| ***	0.044	1.5914	0.0715	0.7470	0.4415
19	6.9000	6.7711	0.1704	0.1289	0.287	0.449	| |	0.018	0.4379	0.2609	1.6648	0.2602
20	7.9000	7.2895	0.2002	0.6105	0.267	2.288	| ****	0.737	2.7016	0.3603	0.4144	2.0276

Output Statistics

Obs	DFBETAS Intercept	HD	AGE	N
1	0.0247	-0.0188	0.0516	-0.0798
2	0.1572	0.2287	-0.1545	-0.4077
3	0.4684	0.1840	-0.3988	-0.1259
4	-0.6521	0.5003	-0.2991	0.2904
5	0.0164	0.0034	-0.0070	-0.0121
6	0.0933	-0.1434	0.0850	0.0305
7	0.0734	0.0612	-0.0979	-0.0525
8	0.0204	0.1288	-0.1577	0.0458
9	0.3857	-0.0187	-0.0881	-0.3052
10	0.0470	-0.6952	0.5366	0.2503
11	-0.0088	-0.1855	0.1040	0.2232
12	0.1313	0.1841	-0.2613	-0.0599
13	-0.4901	0.0237	0.1475	0.2306
14	0.0675	-0.0338	-0.0230	0.0100
15	-0.0305	-0.1188	0.0830	0.0998
16	-0.1649	-0.0623	0.0353	0.2999
17	-0.0399	-0.1243	0.1084	0.0828
18	-0.0643	0.1779	-0.1478	0.0652
19	0.0744	0.2254	-0.2296	-0.0931
20	-0.1745	-0.3834	1.0042	-0.8208