

	grade	sex	disadv	ethnicity	timth
1	6	M	YES	HISPANIC	43
2	7	M	NO	BLACK	88
3	5	F	YES	HISPANIC	34
4	3	M	YES	HISPANIC	65
5	8	M	YES	WHITE	75
6	5	M	NO	BLACK	74
7	8	F	YES	HISPANIC	72
8	4	M	YES	BLACK	79
9	6	M	NO	WHITE	88
10	7	M	YES	HISPANIC	87
11	3	M	NO	WHITE	79
12	6	F	NO	WHITE	84
13	8	M	NO	WHITE	90
14	5	M	NO	WHITE	73
15	8	F	NO	WHITE	72
16	6	F	NO	BLACK	82
17	4	M	NO	WHITE	69
18	3	F	YES	HISPANIC	17
19	3	M	NO	HISPANIC	37
20	5	M	NO	WHITE	70

	(Intercept)	sexM	grade	sexM:grade
1	1.00	1.00	6.00	6.00
2	1.00	1.00	7.00	7.00
3	1.00	0.00	5.00	0.00
4	1.00	1.00	3.00	3.00
5	1.00	1.00	8.00	8.00
6	1.00	1.00	5.00	5.00
7	1.00	0.00	8.00	0.00
8	1.00	1.00	4.00	4.00
9	1.00	1.00	6.00	6.00
10	1.00	1.00	7.00	7.00
11	1.00	1.00	3.00	3.00
12	1.00	0.00	6.00	0.00
13	1.00	1.00	8.00	8.00
14	1.00	1.00	5.00	5.00
15	1.00	0.00	8.00	0.00
16	1.00	0.00	6.00	0.00
17	1.00	1.00	4.00	4.00
18	1.00	0.00	3.00	0.00
19	1.00	1.00	3.00	3.00
20	1.00	1.00	5.00	5.00

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
sex	1	75.37	75.37	0.38	0.5417
ethnicity	3	2572.15	857.38	4.27	0.0072
grade	1	36.31	36.31	0.18	0.6717
disadv	1	59.30	59.30	0.30	0.5882
Residuals	93	18682.87	200.89		

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	73.6364	4.2502	17.33	0.0000
sexM	-1.6364	5.8842	-0.28	0.7816
ethnicityHISPANIC	-9.7614	6.5501	-1.49	0.1395
ethnicityOTHER	15.8636	10.8360	1.46	0.1466
ethnicityWHITE	4.7970	4.9687	0.97	0.3368
sexM:ethnicityHISPANIC	10.6780	8.7190	1.22	0.2238
sexM:ethnicityWHITE	5.1230	7.0140	0.73	0.4670

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	73.6364	4.2502	17.33	0.0000
sexM	-1.6364	5.8842	-0.28	0.7816
ethnicityHISPANIC	-9.7614	6.5501	-1.49	0.1395
ethnicityOTHER	15.8636	10.8360	1.46	0.1466
ethnicityWHITE	4.7970	4.9687	0.97	0.3368
sexM:ethnicityHISPANIC	10.6780	8.7190	1.22	0.2238
sexM:ethnicityWHITE	5.1230	7.0140	0.73	0.4670

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
sex	1	75.37	75.37	0.38	0.5395
ethnicty	3	2572.15	857.38	4.31	0.0068
sex:ethnicty	2	298.43	149.22	0.75	0.4748
Residuals	93	18480.04	198.71		

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	96	19053.59				
2	93	18480.04	3	573.55	0.96	0.4141

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	3.1888	1.5966	2.00	0.0458
ethnictyHISPANIC	-0.2848	2.4808	-0.11	0.9086
ethnictyOTHER	212.1701	22122.7093	0.01	0.9923
ethnictyWHITE	-8.8150	3.3355	-2.64	0.0082
grade	-0.5308	0.2892	-1.84	0.0665
ethnictyHISPANIC:grade	0.2448	0.4357	0.56	0.5742
ethnictyOTHER:grade	-32.6014	3393.4687	-0.01	0.9923
ethnictyWHITE:grade	1.0171	0.5185	1.96	0.0498

	Df	Deviance	Resid. Df	Resid. Dev
NULL			99	129.49
ethnicty	3	47.24	96	82.25
grade	1	1.73	95	80.52
ethnicty:grade	3	7.20	92	73.32

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
block	5	343.29	68.66	4.45	0.0159
N	1	189.28	189.28	12.26	0.0044
P	1	8.40	8.40	0.54	0.4749
K	1	95.20	95.20	6.17	0.0288
N:P	1	21.28	21.28	1.38	0.2632
N:K	1	33.13	33.13	2.15	0.1686
P:K	1	0.48	0.48	0.03	0.8628
Residuals	12	185.29	15.44		

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
block	5	343.29	68.66	4.45	0.0159
N	1	189.28	189.28	12.26	0.0044
P	1	8.40	8.40	0.54	0.4749
K	1	95.20	95.20	6.17	0.0288
N:P	1	21.28	21.28	1.38	0.2632
N:K	1	33.13	33.13	2.15	0.1686
P:K	1	0.48	0.48	0.03	0.8628
Residuals	12	185.29	15.44		

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
block	5	343.29	68.66	4.45	0.0159
N	1	189.28	189.28	12.26	0.0044
P	1	8.40	8.40	0.54	0.4749
K	1	95.20	95.20	6.17	0.0288
N:P	1	21.28	21.28	1.38	0.2632
N:K	1	33.13	33.13	2.15	0.1686
P:K	1	0.48	0.48	0.03	0.8628
Residuals	12	185.29	15.44		

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
N:P:K	1	37.00	37.00	0.48	0.5252
Residuals	4	306.29	76.57		
N	1	189.28	189.28	12.26	0.0044
P	1	8.40	8.40	0.54	0.4749
K	1	95.20	95.20	6.17	0.0288
N:P	1	21.28	21.28	1.38	0.2632
N:K	1	33.14	33.14	2.15	0.1686
P:K	1	0.48	0.48	0.03	0.8628
Residuals1	12	185.29	15.44		

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
N:P:K	1	37.00	37.00	0.48	0.5252
Residuals	4	306.29	76.57		
N	1	189.28	189.28	12.26	0.0044
P	1	8.40	8.40	0.54	0.4749
K	1	95.20	95.20	6.17	0.0288
N:P	1	21.28	21.28	1.38	0.2632
N:K	1	33.14	33.14	2.15	0.1686
P:K	1	0.48	0.48	0.03	0.8628
Residuals1	12	185.29	15.44		

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	5.0320	0.2202	22.85	0.0000
groupTrt	-0.3710	0.3114	-1.19	0.2490

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	5.0320	0.2202	22.85	0.0000
groupTrt	-0.3710	0.3114	-1.19	0.2490

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	5.0320	0.2202	22.85	0.0000
groupTrt	-0.3710	0.3114	-1.19	0.2490

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
group	1	0.69	0.69	1.42	0.2490
Residuals	18	8.73	0.48		

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	3.0445	0.1709	17.81	0.0000
outcome2	-0.4543	0.2022	-2.25	0.0246
outcome3	-0.2930	0.1927	-1.52	0.1285
treatment2	0.0000	0.2000	0.00	1.0000
treatment3	0.0000	0.2000	0.00	1.0000

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)
NULL			8	10.58	
outcome	2	5.45	6	5.13	0.0655
treatment	2	0.00	4	5.13	1.0000

Estimate	Std. Error	z value	Pr(> z )
3.0445	0.1709	17.81	0.0000
-0.4543	0.2022	-2.25	0.0246
-0.2930	0.1927	-1.52	0.1285
0.0000	0.2000	0.00	1.0000
0.0000	0.2000	0.00	1.0000

(Intercept)	3.0445	0.1709	17.81	0.0000
outcome2	-0.4543	0.2022	-2.25	0.0246
outcome3	-0.2930	0.1927	-1.52	0.1285
treatment2	0.0000	0.2000	0.00	1.0000
treatment3	0.0000	0.2000	0.00	1.0000

3.0445	0.1709	17.81	0.0000
-0.4543	0.2022	-2.25	0.0246
-0.2930	0.1927	-1.52	0.1285
0.0000	0.2000	0.00	1.0000
0.0000	0.2000	0.00	1.0000

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	3.0445	0.1709	17.81	0.0000
outcome2	-0.4543	0.2022	-2.25	0.0246
outcome3	-0.2930	0.1927	-1.52	0.1285
treatment2	0.0000	0.2000	0.00	1.0000
treatment3	0.0000	0.2000	0.00	1.0000

	Df	Deviance	Resid. Df	Resid. Dev
NULL			8	10.58
outcome	2	5.45	6	5.13
treatment	2	0.00	4	5.13

	PC1	PC2	PC3	PC4
Murder	0.0417	-0.0448	0.0799	-0.9949
Assault	0.9952	-0.0588	-0.0676	0.0389
UrbanPop	0.0463	0.9769	-0.2005	-0.0582
Rape	0.0752	0.2007	0.9741	0.0723

	PC1	PC2	PC3	PC4
Standard deviation	83.7324	14.2124	6.4894	2.4828
Proportion of Variance	0.9655	0.0278	0.0058	0.0008
Cumulative Proportion	0.9655	0.9933	0.9991	1.0000

Table 1: Time series example

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954							1.25	1.85	3.12	3.72	4.99	4.62
1955	4.63	5.29	7.10	8.37	10.59	11.76	14.01	16.14	17.36	17.63	18.35	18.99
1956	20.17	19.97	21.14	21.86	21.82	22.60	22.63	23.84	24.97	26.46	28.89	28.90
1957	29.32	30.34	32.44	35.14	36.43	36.63	36.49	38.11	38.14	38.69	39.67	40.76
1958	41.60	41.47	43.79	43.82	46.02	47.99	47.76	50.65	52.89	53.08	52.79	52.12
1959	52.70	53.62	56.05	59.16	60.02	61.89	62.88	64.90	65.63	68.30	68.79	69.74
1960	70.36	69.62	71.30	72.23	71.88	72.76	75.54	76.28	76.85	78.01	77.90	78.14
1961	79.78	79.75	82.10	83.80	86.05	86.42	87.91	89.87	89.83	90.81	91.91	94.03
1962	94.00	94.12	95.51	97.91	97.90	98.39	98.34	98.90	99.21	101.02		

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954							1.25	1.85	3.12	3.72	4.99	4.62
1955	4.63	5.29	7.10	8.37	10.59	11.76	14.01	16.14	17.36	17.63	18.35	18.99
1956	20.17	19.97	21.14	21.86	21.82	22.60	22.63	23.84	24.97	26.46	28.89	28.90
1957	29.32	30.34	32.44	35.14	36.43	36.63	36.49	38.11	38.14	38.69	39.67	40.76
1958	41.60	41.47	43.79	43.82	46.02	47.99	47.76	50.65	52.89	53.08	52.79	52.12
1959	52.70	53.62	56.05	59.16	60.02	61.89	62.88	64.90	65.63	68.30	68.79	69.74
1960	70.36	69.62	71.30	72.23	71.88	72.76	75.54	76.28	76.85	78.01	77.90	78.14
1961	79.78	79.75	82.10	83.80	86.05	86.42	87.91	89.87	89.83	90.81	91.91	94.03
1962	94.00	94.12	95.51	97.91	97.90	98.39	98.34	98.90	99.21	101.02		

Table 2: Time series example