Matematisk statistik
KTH
Jan Enger

Inlämningsuppgift i kursen tillämpad matematisk statistik

Effect of Punishment Regimes on Crime Rates

Description
Criminologists are interested in the effect of punishment regimes on crime rates. This has been studied using aggregate data on 47 states of the USA for 1960. The variables seem to have been re-scaled to convenient numbers.

The data set contains the following columns:

M	percentage of males aged 14-24
So	indicator variable for a southern state
Ed	mean years of schooling
Po1	police expenditure in 1960
Po2	police expenditure in 1959
LF	labour force participation rate
M.F	number of males per 1000 females
Pop	state population
NW	number of nonwhites per 1000 people
U1	unemployment rate of urban males 14-24
U2	unemployment rate of urban males 35-39
GDP	gross domestic product per head
Ineq	income inequality
Prob	probability of imprisonment
Time	average time served in state prisons
Crime	rate of crimes in a particular category per head of population

Analyse the data, especially discuss if the data suggest the causes of the crime rates.

Source
Ehrlich, I. (1973) Participation in illegitimate activities: a theoretical and empirical investigation. Journal of Political Economy 81, 521-565.
Vandaele, W. (1978) Participation in illegitimate activities: Ehrlich revisited. In Deterrence and Incapacitation, eds A. Blumstein, J. Cohen and D. Nagin, pp. 270-335. US National Academy of Sciences.
Venables, W., and Ripley, B. (1998). Modern Applied Statistics with S-Plus, Second Edition. Springer-Verlag.

The data originally came from the Uniform Crime Report of the FBI and other US government sources.

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Data:

M	So	Ed	Po1	Po2	LF	M.F	Pop	NW	U1	U2	GDP	Ineq	Prob	Time	Crime
151	1	91	58	56	510	950	33	301	108	41	394	261	0.084602	26.2011	791
143	0	113	103	95	583	1012	13	102	96	36	557	194	0.029599	25.2999	1635
142	1	89	45	44	533	969	18	219	94	33	318	250	0.083401	24.3006	578
136	0	121	149	141	577	994	157	80	102	39	673	167	0.015801	29.9012	1969
141	0	121	109	101	591	985	18	30	91	20	578	174	0.041399	21.2998	1234
121	0	110	118	115	547	964	25	44	84	29	689	126	0.034201	20.9995	682
127	1	111	82	79	519	982	4	139	97	38	620	168	0.0421	20.6993	963
131	1	109	115	109	542	969	50	179	79	35	472	206	0.040099	24.5988	1555
157	1	90	65	62	553	955	39	286	81	28	421	239	0.071697	29.4001	856
140	0	118	71	68	632	1029	7	15	100	24	526	174	0.044498	19.5994	705
124	0	105	121	116	580	966	101	106	77	35	657	170	0.016201	41.6	1674
134	0	108	75	71	595	972	47	59	83	31	580	172	0.031201	34.2984	849
128	0	113	67	60	624	972	28	10	77	25	507	206	0.045302	36.2993	511
135	0	117	62	61	595	986	22	46	77	27	529	190	0.0532	21.501	664
152	1	87	57	53	530	986	30	72	92	43	405	264	0.0691	22.7008	798
142	1	88	81	77	497	956	33	321	116	47	427	247	0.052099	26.0991	946
143	0	110	66	63	537	977	10	6	114	35	487	166	0.076299	19.1002	539
135	1	104	123	115	537	978	31	170	89	34	631	165	0.119804	18.1996	929
130	0	116	128	128	536	934	51	24	78	34	627	135	0.019099	24.9008	750
125	0	108	113	105	567	985	78	94	130	58	626	166	0.034801	26.401	1225
126	0	108	74	67	602	984	34	12	102	33	557	195	0.0228	37.5998	742
157	1	89	47	44	512	962	22	423	97	34	288	276	0.089502	37.0994	439
132	0	96	87	83	564	953	43	92	83	32	513	227	0.0307	25.1989	1216
131	0	116	78	73	574	1038	7	36	142	42	540	176	0.041598	17.6	968
130	0	116	63	57	641	984	14	26	70	21	486	196	0.069197	21.9003	523
131	0	121	160	143	631	1071	3	77	102	41	674	152	0.041698	22.1005	1993
135	0	109	69	71	540	965	6	4	80	22	564	139	0.036099	28.4999	342
152	0	112	82	76	571	1018	10	79	103	28	537	215	0.038201	25.8006	1216
119	0	107	166	157	521	938	168	89	92	36	637	154	0.0234	36.7009	1043
166	1	89	58	54	521	973	46	254	72	26	396	237	0.075298	28.3011	696
140	0	93	55	54	535	1045	6	20	135	40	453	200	0.041999	21.7998	373
125	0	109	90	81	586	964	97	82	105	43	617	163	0.042698	30.9014	754
147	1	104	63	64	560	972	23	95	76	24	462	233	0.049499	25.5005	1072
126	0	118	97	97	542	990	18	21	102	35	589	166	0.040799	21.6997	923
123	0	102	97	87	526	948	113	76	124	50	572	158	0.0207	37.4011	653
150	0	100	109	98	531	964	9	24	87	38	559	153	0.0069	44.0004	1272
177	1	87	58	56	638	974	24	349	76	28	382	254	0.045198	31.6995	831
133	0	104	51	47	599	1024	7	40	99	27	425	225	0.053998	16.6999	566
149	1	88	61	54	515	953	36	165	86	35	395	251	0.047099	27.3004	826
145	1	104	82	74	560	981	96	126	88	31	488	228	0.038801	29.3004	1151
148	0	122	72	66	601	998	9	19	84	20	590	144	0.0251	30.0001	880
141	0	109	56	54	523	968	4	2	107	37	489	170	0.088904	12.1996	542
162	1	99	75	70	522	996	40	208	73	27	496	224	0.054902	31.9989	823
136	0	121	95	96	574	1012	29	36	111	37	622	162	0.0281	30.0001	1030
139	1	88	46	41	480	968	19	49	135	53	457	249	0.056202	32.5996	455
126	0	104	106	97	599	989	40	24	78	25	593	171	0.046598	16.6999	508
130	0	121	90	91	623	1049	3	22	113	40	588	160	0.052802	16.0997	849

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