

Full Moon and Crime

Abstract: The incidence of crimes reported to 3 police stations in different towns (one rural, one urban, one industrial) was studied to see if it varied with the day of the lunar cycle. The study covered the period 1978-82. The incidence of crimes committed on full moon (FM) days was much higher than on all other days, new moon (NM) days, and seventh days after the full moon and new moon. A small peak in the incidence of crimes was observed on new moon days but this was not significant when compared with crimes committed on other days. The incidence of crimes on equinox and solstice days did not differ significantly from those on other days, suggesting that the sun probably does not influence the incidence of crime.

The incidence of crimes on full moon days may be due to "human tidal waves" caused by the gravitational pull of the moon

Materials and methods

Sample size -- Sample size was decided on the basis of a two sided test of the hypothesis of equality of the incidence of crimes reported during the five years. At the 5% level of significance the power of the test was set at 90% for an expected difference of 20% in the incidence of crime between full moon and non-full moon days. The sample size was established at 154 full moon days.

Selection of police stations -- We randomly selected Gaya Sadar, Kirtya Nand Nagar, and Sonari police stations of Bihar State. These three police stations are at least 300 Km apart.

Collection of data -- The number of crimes reported on each day during 1978-82 was noted by one of us. Data from all three police station were pooled and the crimes coded and analysed by computer. ...

Statistical Analysis -- Frequency distributions were calculated to show the numbers of crimes committed on each day. Appropriate statistical analysis was done and significance assessed by χ^2 test and a confidence interval (CI).

Results See Table I. The value had been calculated assuming that the time factor (full moon, non-full moon days) was independent of the intensity (number of instances) of crime.

Using this hypothesis expected frequencies of various cells had been calculated. In testing for the goodness of fit the χ^2 value came out as 231.65 for 3 df and gave $p < 0.001$; this was highly significant and indicated that the hypothesis could be rejected outright. The CI's for the population means in the cases of FM and non-FM were respectively 1.4 ± 0.17 and 0.54 ± 0.02 . These were clearly quite distinct and non-overlapping, so that it might safely be concluded that the means were significantly different.

The CI for NM days was 0.51 ± 0.10 , which was also quite distinct from the CI for FM days. Data for FM days were quite different from all other data, and the test yielded $p < 0.001$ when FM days were compared with NM and non-FM days. There were no obvious differences between the other days.

Though there was a small rise in crime on NM days (figure), it was not significant as compared with all minus NM days ($p > 0.05$) and 7th days after NM and FM days ($p > 0.5$). ..

The trend of crime reported from different police stations was closely similar (Table II).

The mean crime rate climbed from 0.40 on the 7th days after the full moon to 0.69 on the 3rd days before the NM, and after falling rather abruptly to 0.52 on days of the NM climbed again to 0.67 on the 3rd days after the NM. It dropped again to 0.45 on the 7th days after the NM to remain almost steady up to 0.48 on the 3rd days before the FM. Thereafter, there was a rapid rise in the crime rate to 1.40 on days of the full moon, returning almost to the previous level of 0.51 on the 3rd days after the FM (figure).

Figure:

Mean incidence of crime on different days of lunar month

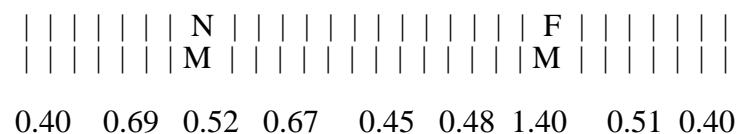


Table I. Numbers of full moon days, new moon days, seventh days after full moon, seventh days after new moon, non-full moon days, all minus full and new moon days, and equinox and solstice days according to Gregorian calendar and frequencies of crimes committed on those days during 1978 to 1982.

No. of Crimes	Full Moon days	New Moon days	7th days post Full Moon	7th days post New Moon	All minus Full Moon days	All minus Full & New M days	Equi -nox days	Sol- stice days
0	40	114	129	119	3102	2988	22	16
1	64	56	44	52	1690	1634	7	9
2	56	11	9	13	368	357	1	3
3	19	4	3	2	99	95	0	1
4	1	11	1	0	26	25	0	1
5	2	0	0	0	9	9	0	0
6	0	0	0	0	1	1	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0
9	1	0	0	0	0	0	0	0
<u>total days</u>	<u>183</u>	<u>186</u>	<u>186</u>	<u>186</u>	<u>5295</u>	<u>5109</u>	<u>30</u>	<u>30</u>
Total no. of crimes mean	256	94	75	84	2878	2784	9	22
no. of crimes per day	1.40	0.50	0.40	0.45	0.54	0.54	0.30	0.73
sd of no. of crimes per day	1.16	0.75	0.70	0.67	0.77	0.77	0.53	0.99

Table II. Frequency distribution of crimes in three different areas and their significance

No. of Crimes	Gaya Sadar		Kirtya Nand Nagar		Somari	
	Full Moon days	All minus F M days	Full Moon days	All minus F M days	Full Moon days	All minus Full Moon days
0	7	595	11	1258	22	1249
1	17	874	28	431	19	385
2	21	210	19	61	16	97
3	14	61	2	12	3	26
4	1	19	0	3	0	4
5	1	5	1	0	0	4
6	0	1	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	1	0
<u>total days</u>	<u>61</u>	<u>1765</u>	<u>61</u>	<u>1765</u>	<u>61</u>	<u>1765</u>
Total no. of crimes mean	110	1584	77	601	69	693
no. of crimes per day	1.80	0.89	1.26	0.34	1.13	0.39
sd of no. of crimes per day	0.07	0.86	0.90	0.59	1.36	0.71
χ^2	77.4		207.3		162.9	
3 df p Value	<0.001		<0.001		<0.001	