Traffic Deaths and Superstition on Friday the 13th

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Objective: This study compared deaths from traffic accidents on Friday the 13th with those on other Fridays in a national population.

Method: The author examined the daily deaths from traffic accidents by sex and age and the mean daily temperature in Finland, 1971–1997. Adjusted risk ratios for death on Friday the 13th versus other Fridays were obtained by negative binomial regression.

Results: In men, the adjusted risk ratio for dying on Friday the 13th, compared with other Fridays, was 1.02, but for women, it was 1.63. An estimated 38% of traffic deaths involving women on this day were attributable to Friday the 13th itself.

Conclusions: Friday the 13th may be a dangerous day for women, largely because of anxiety from superstition. The risk of traffic deaths on this date could be reduced by one-third, although the absolute gain would remain very small: only one death per 5 million person-days.

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People's superstitions can interfere with their behavior in a way that can impair psychic and psychomotor functioning, especially in situations demanding concentration (1). Since situations of this kind typically occur while driving, one would expect to see an increase in traffic accidents on Friday the 13th, which is commonly believed to be an unlucky day. A study performed in Britain (2) suggested that hospital admissions for transport accidents may increase by a factor of one-half on Friday the 13th, as compared with Friday the 6th; however, the study group was considered too small for meaningful analysis. The issue was therefore reassessed here by use of a national population.

Method

The daily numbers of deaths from 1971 to 1997 were obtained from the national cause-of-death files of Finland, which include persons aged 15–84 years whose underlying cause of death was a traffic accident (ICD-7 codes E800–E866 for 1961–1968, ICD-8 codes E807–E846 for 1969–1986, ICD-9 codes E800–E848 for 1987–1995, and ICD-10 codes V01–V99 for 1996–1997). The determination of cause of death was based on autopsies in 95% of the cases. During 1971–1997, there were 1,409 Fridays and 324 13th days of the month, 45 of which were Friday the 13th. Good Fridays were excluded, leaving 43 Friday the 13ths and 1,339 other Fridays for analysis. Since traffic accidents may be influenced by weather conditions, the mean daily temperatures were obtained from the Jokioinen weather station, which is located very close to the population-centered midpoint of Finland.

The death counts and person-days were tabulated by sex, age, and year and according to whether the death occurred on Friday the 13th or on another Friday. The relative risk of dying on Friday the 13th, compared with a normal Friday, was estimated with use of negative binomial regression (3, 4), in which allowances were made for age, time period, and temperature on the day of death. This method also allows for extra-Poisson variation (overdispersion), possibly caused by nonindependence of daily death counts. The significance of model terms was evaluated by the likelihood ratio test (3). Deaths attributable to Friday the 13th were expressed in terms of attributable risk. Age (in 10-year bands), time period (1971–1975…1986–1990, or 1991–1997), and temperature (in quintiles) were treated as categorical variables.

Results

Altogether, 82 men and 41 women died on Friday the 13ths, and 2,423 and 789 died, respectively, on other Fridays. Men's deaths were not significantly higher on Friday the 13th than on other Fridays, but women's deaths increased by a factor of 1.61, with the confidence interval well above baseline (Table 1).

The crude comparison between deaths on Friday the 13th and on other Fridays was slightly unbalanced with respect to age and temperature. Men who died on Friday the 13th were younger (mean age=41.5 years, SD=18.9) than other men (mean age=44.6 years, SD=19.4) (difference: t=1.44, df=2505, p≤0.15, two-tailed); an even greater age difference existed for women (mean=45.6 years, SD=21.9, versus mean=51.7 years, SD=20.7, respectively) (t=1.84, df=830, p≤0.07). Friday the 13ths were also slightly warmer (mean temperature=5.4°C, SD=8.7°C) than other Fridays (mean temperature=4.3°C, SD=9.3°C) (t=0.71, df=1380, p≤0.48). These factors could have influenced the results, since the deaths of men usually occurred during the warmest temperature quintile (13°C to 24°C) and the deaths of women during the second coldest quintile (–3°C to 1°C), which corresponds to slippery road conditions. An adjustment for these factors caused some reduction of the risk ratio for men and some increase for women (Table 1). The overdispersion parameter was significant for men (χ^2=36.58, df=1, p≤1.5×10^{-9}) but not for women (χ^2=3.24, df=1, p≤0.08).

For the deaths of men that occurred on Friday the 13th, only an estimated 5.0% (0.05 deaths per million person-days) were attributable to the day itself, while the figure was 38.0% (0.18 deaths per million person-days) for women (Table 1). Among deaths occurring on any Friday (the 13th or any other), the risk attributable to the 13th day of the month was negligible.

TABLE 1. Deaths From Traffic Accidents on Friday the 13th and Other Fridays in Finland, 1971–1997, From National Cause-of-Death Files

Group and Time	Mortality Measure			Risk Ratio[a]						Attributable Risk on Friday the 13th[b]				Attributable Risk on All Fridays[c]	
				Unadjusted			Adjusted[d]			Absolute (deaths/10^6 person-days)		Relative		Absolute (deaths/10^6 person-days)	Relative
	Deaths	Person-Days ($\times 10^6$)	Deaths /10^6 Person-Days	Ratio	95% CI	p	Ratio	95% CI	p	Risk	95% CI	Risk	95% CI		
Men				1.05	0.83 to 1.31	0.65	1.02	0.81 to 1.28	0.90	0.05	–1.18 to 0.28	0.05	–0.20 to 0.24	0.001	0.002
Friday the 13th	82	79.9	1.03												
Other Fridays	2,423	2,483.7	0.98												
Women				1.61	1.15 to 2.21	0.005	1.63	1.19 to 2.25	0.005	0.18	0.03 to 0.33	0.38	0.13 to 0.55	0.005	0.02
Friday the 13th	41	86.5	0.47												
Other Fridays	789	2,687.1	0.29												

[a] Risk of death on Friday the 13th compared with other Fridays.
[b] Deaths on Friday the 13th attributable to Friday the 13th itself.
[c] Deaths on all Fridays attributable to the 13th day of the month.
[d] Adjusted for age, time period, temperature, and extra-Poisson variation.

Discussion

Superstition may affect human behavior in a multitude of surprising ways. Patients may not want to be discharged from the hospital on certain days (5); some women try to avoid giving birth during the eighth month of pregnancy (6). A belief in Friday the 13th as an ill-fated day is not uncommon (1, 2). The present result cannot be accounted for by any other special day falling on Friday the 13th or by deviations in weather conditions. The method adjusted for extra variation, which could have been caused by more than one person dying in the same accident. As in all empirical studies, the possibility of a chance finding exists but seems rather improbable.

It is not inconceivable that on Friday the 13th women who are susceptible to superstitions obsess that something unfortunate is going to happen, which causes anxiety and the subsequent degradation of mental and motor functioning. Presumably, in women suffering from neurotic illness and situational fears, awareness of this day could produce driving errors with fatal consequences. An additional factor is anxiolytic medication, used by significantly more women than men in Finland (7), which has been reported to reduce attention span and worsen driving performance (8). No information exists on the possibility of oral contraceptives or gravidity having a similar effect. Why this phenomenon exists in women but not in men remains unknown, but perhaps the twice-as-high prevalence of neurotic disorders and anxiety symptoms in women (7) makes them more susceptible to superstition and worsening of driving performance. The interpretation of the finding is complicated in that a portion of the victims were passengers, bicyclists, or pedestrians. However, in the latter two cases, a similar line of reasoning, based on psychomotor malfunctioning, is applicable.

In conclusion, Friday the 13th appears to be dangerous for some women. Since Friday falls on the 13th day of the month only twice a year on average, prospects for significant public health gains are limited. However, the risk of death for women who venture into traffic on this unlucky day is higher by 63%, and it should be possible to prevent one-third of the deaths occurring on this particular day. Even then, the absolute gain would remain marginal, since only one death per 5 million person-days could be prevented.

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