Females don't have more injury road accidents on Friday the 13th

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Abstract

Background: This study reinvestigated the recent finding that females die in traffic accidents on Friday the 13th more often than on other Fridays, using more numerous and more specific injury accident database.

Methods: Road accidents on 21 Fridays the 13th were compared to previous and following Fridays, in a matched design, in the national Finnish road accident database for 1989-2002.

Results: There were no differences in any aspects of road injury accidents between the three Fridays, either in females or males.

Conclusion: There is no consistent evidence for females being at higher risk in traffic on Fridays the 13th.
Background

One of the most spread superstitions is that Friday the 13th brings bad luck. However, the few studies published on human behaviour and its consequences on that day show inconsistent results, whether they be on economic behaviour (1-3) or health risks (4-6). A recent nationwide study on the 1971-97 death statistics in Finland (7) found that men's deaths did not increase on Friday the 13th but females’ did by a factor of 1.61, and by 1.63 as adjusted for age, time period, temperature, and extra Poisson variation. The author's conclusion was that Friday the 13th may be a dangerous day for some women, presumably because of anxiety from superstition and, possibly, anxiolytic medications.

This interpretation is not without problems. First, although the author repeatedly refers to driving, it should be noted that he also included water and air traffic accidents. Secondly, as the author pointed out himself, his data included passengers killed in accidents, who typically have no control on the task. Impaired psychic and psychomotor functioning due to anxiety, which could indeed be more frequent in females due to their higher neuroticism rate (8), superstition (9-10) and smaller amount of driving experience (11) should primarily affect safety in cases where females were active traffic participants. Finally, in spite of the long study period, the data only included 41 female deaths on 43 Fridays the 13th which means 16 deaths more than expected. If the females are really more anxious and get into trouble in traffic on Fridays the 13th more often than men, the effect should also appear in much more numerous injury accidents.

We replicated the study (7) using the national Finnish road accident data base of injury accidents (12) for 1989-2002, all years available in a comparable format.
These data also include road-traffic fatalities, and for that part they overlap with Näyhä’s study period and data.

**Methods**

There were 24 Fridays the 13th during the study period. However three of them were excluded because two were Good Fridays and one followed Thursday’s holiday. To control traffic, season, and weather-type effects, remaining twenty-one Fridays the 13th were compared with the previous Fridays the 6th and the following Fridays the 20th on the number of accidents, male/female responsibility for accidents, the number of dead, injured and overall number of active participants as a consequence of accident, separately for women and men. Seven holidays or otherwise unusual control Fridays were replaced by the mean values of the accident variables (e.g. number of accidents, number of injured) from the previous and following years’ closest Fridays. For example, Friday the 20th in June 1997 falling on Midsummer holiday eve was replaced by mean values gathered from Fridays June 14th, 1996 and June 12th, 1998. To avoid violating parametric assumptions, the Friedman analysis of variance by ranks (13) was used to test differences across 21 matched triplets of Fridays.

**Results**

Table 1 presents accidents and active participants and victims by gender for the Fridays the 13th and the preceding and next Fridays. Comparisons of 21 triplets showed no significant difference in injury accidents (Friedman $\chi^2 = 3.534$, df=2, $p=0.171$); in active participants, neither for females ($\chi^2 = 0.025$, df=2, $p=0.987$) nor
males ($\chi^2= 0.173, \text{df}=2, p=0.917$); in injured active participants, neither for females ($\chi^2= 1.162, \text{df}=2, p=0.559$) nor males ($\chi^2= 0.532, \text{df}=2, p=0.767$); in dead active participants, neither for females ($\chi^2= 2.735, \text{df}=2, p=0.255$) nor males ($\chi^2= 0.448, \text{df}=2, p=0.799$) between three Fridays. Chi-square test in aggregate analysis did not show any significant connection between responsibility and gender of active participants on different Fridays (Friday the 13th vs. average of Fridays the 6th and 20th; Chi-square test, $\chi^2=0.004, \text{df}=1, p=0.950$).

**Conclusion**

This study did not show any differences in any aspects of injury accidents between Fridays the 13th and the previous Fridays the 6th and the following Fridays the 20th. This is inconsistent with Näyhä’s (7) results that were based on much less numerous deaths statistics and also inconsistent with earlier British results (4). Given that women’s more frequent superstition and related anxiety would cause unsafe traffic behaviour, injury accidents should increase as well as fatalities. This is definitely not the case in the Finnish road accident statistics. Although injury accidents are not reported as completely as fatalities, however, we do not see any reason for biased reporting on Fridays the 13th. Our analysis did not even show any significant gender effect in fatalities although these data partly overlapped with those of Näyhä (7).

We conclude that females do not have more injury (or fatal) traffic accidents as a driver, bicyclist or pedestrian on Fridays the 13th, and we suggest that Näyhä’s result on fatalities is due to random variation. However, this does not imply a non-existent effect on accident risk as no exposure-to-risk data (14) are available. People
who are anxious of "Black Friday" may stay home, or at least avoid driving a car. The only relevant data (4), suggesting a small decrease in highway traffic, is rather limited and should be confirmed with more extensive research.

Competing interests
None declared.

Authors' contributions
Both authors participated in each stage of research and manuscript preparation.

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References
1. Dyl E, Maberly E: The anomaly that isn’t there: a comment on Friday the thirteenth. The Journal of Finance 1988, 43: 1285-1286
12. The Statistics Office of Finland, Road Accident Statistics
### Tables

**Table 1** - The number of injury accidents, active participants, and victims by gender on Fridays the 13th, the previous (the 6th) and following (the 20th) Fridays. \( N \) for the matched triplets of Fridays = 21

<table>
<thead>
<tr>
<th></th>
<th>Number of accidents</th>
<th>Number of active participants</th>
<th>Victims</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Friday</td>
<td>Total</td>
<td>Mean</td>
<td>Total</td>
</tr>
<tr>
<td>6th</td>
<td>542.5</td>
<td>25.83</td>
<td>299.5</td>
</tr>
<tr>
<td>13th</td>
<td>608</td>
<td>28.95</td>
<td>317</td>
</tr>
<tr>
<td>20th</td>
<td>546.5</td>
<td>26.02</td>
<td>299</td>
</tr>
</tbody>
</table>

* Decimal numbers are due to replacement of seven holidays or otherwise unusual control Fridays with the mean values of the variables from the previous and following years’ closest Fridays.

** Numbers for victims refer to active participants while those in parenthesis also include passengers.