Author's response to reviews

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

Authors:

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Version: 3 Date: 23 September 2004

Author's response to reviews: see over
Our general comments: after reading reviewers’ comments we realised that the first version of manuscript was very short and not sufficiently clear in stressing shortcomings of Näyhä’s research and advantages of our approach and used methodology. We have revised our manuscript according to reviewers’ critics and suggestions and believe that readers will not have any problems in reading and understanding revised version.

We have also added an important rationale for further analysis of this issue: “In spite of Näyhä’s fairly conservative conclusion, his results have been widely publicised as evidence that superstitious female drivers die on Fridays the 13th (13) in marked contrast to men. Due to the shortcomings listed above, and fairly small sample size, the results deserve reinvestigation to avoid premature conclusions and improper interpretations which tend to promote sexist attitudes about women drivers.”

Reviewer 1

Reviewer’s report
Title: Females don’t have more injury road accidents on Friday the 13th
Version: 1 Date: 1 August 2004
Reviewer: Bahman S Roudsari
Reviewer’s report:
General

1. The writing style needs fundamental improvements. It is not publishable in the current format.

*It has now been checked by a native American researcher in this field.*

2. I prefer to use the word “Crash” instead of “Accident”. Injury experts believe that these crashes are not the results of bad luck and do not happen haphazardly. Therefore they are not “accidents”.

*Crash is OK, on grounds given by the reviewer, although accident is still widely used in traffic safety literature and is in line with the view that a substantial part of road crashes are due to normal habitual driving.*

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Methods:
1. What are the advantages of your study compared to the previous study? You have considered shorter period of time (13y vs. 26 years), smaller number of Fridays (21 vs. 43) and smaller sample size.

*In spite of shorter period of time and smaller number of Fridays we have 317 active female participants and 229 female victims on Fridays 13th (i.e. critical cases) against 41 female victims (expectation as small as 25) in Nayha’s data. This is a decisive difference.*

2. None of the problems that you have mentioned in regards to the weaknesses of the previous study has been addressed in your study. You have probably adjusted for the same variables that the previous study has done.

- we have excluded other than road traffic crashes,
- we have excluded holidays which confuse conclusions
- we have analysed active participants who are the link between superstitious anxiety and road crashes- we have used much higher number of cases; higher average number per day makes it much safer to conclude as all kinds of (eg) regional effects are more evenly distributed
we have used matched design which as such is much safer than adjusting for a number of variables; especially with a small number of cases, like in Näyhä's data, adjustments in multivariate models may not have more than face validity.

3. You have not mentioned in the methodology that what type of motor vehicle crash victims are included in your study, although you have mentioned in Table 1.

We added following sentence in method section: “Active participants include drivers, cyclists and pedestrians who actively controlled their motion in traffic and may get involved in crashes. Motor vehicle passengers were excluded.”

4. I do not quite understand that why you have excluded other victims (according to you, “non-active participants”). If your hypothesis is right, a superstitious mother might endanger or protect her kids from crash. No matter kids are superstitious or not they are (or are not) at risk of traffic crashes. Personally I prefer to evaluate the effects of superstitious attitude on the risk of traffic crashes in the general population and not only those with this attitude.

We tested the hypothesis (also possible explanation given by Nayha) whether assumed more frequent superstitious anxiety among women results in more crashes on Fridays 13th. It may lead to death or injuries of a passenger but we must analyze ACTIVE PARTICIPANTS because anxiety-related dysfunction is due to active control of motion in traffic. It is the active participant's mistake that matters, i.e. the driver's, pedestrian's, or bicyclist's. There may be cases where a superstitious passenger affects a driver's performance but we claim that its role is quite small (cf. literature on passenger effects on road crashes). We see even more clearly that looking only all deceased persons, in any role, is very confusing.

5. As it has been shown by the authors, there is no difference between Fridays the 6th and the 20th in any evaluated item. Your data shows that you can easily combine other Fridays. What has happened to the last Friday?

We see it much safer to make comparisons with preceding and following Fridays. The basic argument for using this design was to compare Fridays that are as close to each other as possible, consecutive Friday therefore, to control for all kinds of seasonal changes. There is no reason to take any more control Fridays (we understood “the last Friday” refers to the last in that month) before or after, the time difference only extends unnecessarily. Please note that the month is not a relevant entity here, it does not carry any meaning, only matched closest Fridays matter.

6. “To control for traffic, season...”. You should not control for traffic, because it is the dependent variable of your study. In other words superstitious attitude affects the traffic situation (if the hypothesis is true).

We don't agree. We control for general seasonal trend in travel patterns and people's life, not Friday 13th effect. Unfortunately, we don't have available mileage data by gender on Friday 13th and other Fridays. Of course we would have taken it into account.

It is indeed expected that during consecutive Fridays in Sept for example, traffic flows and conditions and weather conditions and driver populations on road are more similar than among three Fridays taken from different seasons. In addition to road and weather and traffic conditions, driver populations change from time to time.

Superstitious attitude --> using anxiolytic/anxiety (you have mentioned as one hypothesis) --> change in traffic behavior (increase or decrease in high risk behavior, --> increase or decrease in driving mileage) --> increase or decrease risk of traffic crashes --> increase or decrease crash incidence
Please note that we already have made this point at the end of conclusion in the first submitted version:
“However this does not imply a non-existent effect on accident risk as no exposure-to-risk data (16) are available. People who are anxious of “Black Friday” may stay home, or at least avoid driving a car.”
For more information on your point 6, see ref 16, Summala H. Accident risk and driver behaviour. Safety Sci 1996, 22: 103-117

7. Page 4, line 14: “… mean values gathered from Fridays…” . Why this surrogate? What is the rationale behind it?

Added sentence: “That was done to preserve sample size.”

8. Whay using matched analysis? Wasn't Poisson regression a better statistical approach? The Friedman Analysis of Variance is the non-parametric version of repeated measures ANOVA. If you combine Fridays the 6th and 20th (and probably add the last Friday of the month) you can use non-parametric tests for paired test analysis (Wilcoxon signed ranks test).

The matched analysis is to control major seasonal variation, as mentioned above. It is absolutely a better design than taking all Fridays like Näyhä did and apply either logistic or Poisson regression. He is in troubles especially as the number of cases is so small and adjustments in his model are of questionable validity.

Friedman is a powerful and safe non-parametric test, and as we said it above, it is more informative to use triplets than to combine preceding and following Friday. Among many analyses we actually already used Wilcoxon signed rank test in paired comparisons and got very similar results. We think there is no reason to add them.

As we found that it is not easy to follow our analysis, we did it more clear. First, we shortened Table 1 and presented daily averages in a Figure that should now show very clearly the major parameters. Secondly, we computed female/male ratio for each consecutive Friday triplets and run (safe and powerful) Friedman for the ratios. This is the way of directly testing Day x Gender interactions. The results confirm that, as related to males, females did not have more injury crashes on Friday the 13th.

conclusion:

1. Vague

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Abstract:
“… using MORE numerous and MORE specific…” More compare to what? If authors are determined to mention this, they should mention, “more compare to … (e.g. another study)" and it should be mentioned in the methodology section and not in the background.

We have revised the text (end of Background) but kept it there because we see that Background/Introduction is the section where the goal and motivation for the study is given, and one of the rationales is to use injury data base.

Methods:
“Road accidents … were compared”. What aspects of “road accidents”?

the revised text: " To control seasonal variation in traffic and weather-type, the remaining 21 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 (police officer judgment), the number of dead, injured and overall number of active participants as a consequence of accident, separately for women and men.”
Results:
“… any aspects…”: have you evaluated all aspects of traffic crashes?

The revised text: "There were no significant differences in any examined aspects of road injury accidents between the three Fridays, either in females or males."

Background:
Page 3, par 2, last 3 lines: “If the female… accidents”. Why? What are the expected and the observed numbers?

The revised text: "If women’s assumed more frequent superstitious (and traffic-related) anxiety indeed would result in attentional and psychomotor dysfunctioning on Fridays 13th, claimed by Nayha (7) on the basis of fatality statistics, the effect should also be found in injury crashes."

Expectation is drawn from males’ crashes on Friday 13th against other most similar Fridays, preceding and following the former one, and we test females’ crash frequencies against them.

Results:
1. What does “active participants” mean?

We added following sentence in method section: "Active participants include drivers, bicyclists and pedestrians who actively control their motion in traffic and may get involved in crashes. Motor vehicle passengers are excluded."

2. “Chi Square test … between responsibility and gender…”: How the responsibility has been defined? Is it equivalent of “active participants)?

No, it is legal responsibility based on police officer judgment.

Conclusion:
Page 5, line11: “… less numerous deaths…”: they have included longer period of time (26y vs. 13y), all type of “accidents” (“motor vehicle crashes, in roads, in water and in air”), and all types of “victims”, but they had smaller number of dead cases in their analysis? Am I right? What has happened between 1997 and 2002 that can explain such a prominent change in the number of fatal crashes that you have observed in your study, if there is any?

The key point is that our analysis covered injury accidents (also incl. fatalities), Nayha only analysed fatalities. We had 21 dead females on Friday 13th for 1989-2002 (6 of them passengers), Nayha had 41 for 1971-97, but we also had 214 women injured on Friday 13th.

Page 5, line 21: random variation of what?

Näyhä concludes: "As in all empirical studies, the possibility of a chance finding exists but seems rather improbable."

We suggest, in revision:
"We suggest that Näyhä’s contradicting result on fatalities is due to different sampling, non-optimal setting and chance in a fairly small data."

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes

Declaration of competing interests: None
Reviewer 2

Reviewer's report
Title: Females don't have more injury road accidents on Friday the 13th
Version: 1 Date: 19 August 2004
Reviewer: Francesca Valent

Reviewer's report:
General
The study investigates the possible association between Friday the 13th and increased injuries due to road accidents in Finnish females. There have not been many studies on this topic; for this reason this article is very interesting. I have some comments, particularly on the interpretation of the results.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
None

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
None

Discretionary Revisions (which the author can choose to ignore)

1) The authors claim that "One of the most spread superstitions is that Friday the 13th brings bad luck". I am not sure whether it is true all over the world, therefore the authors should add "in Finland".

We made changes following this recommendation: “One widely spread superstition is that Friday the 13th brings bad luck.”

2) In the last paragraph of the Background, the authors state that they replicated the study by Nayha, however the methods they used are different so I would suggest not to use that term.

Following this recommendation we changed "replicated" to "reinvestigated".

3) In the first sentence of the Conclusion the authors say that "This study did not show any differences in any aspects of injury accidents ...". That is not true. In fact, their results did show an increase in the number of accidents, injuries and deaths on Fridays the 13th, both in males and in females. However, such increase is not statistically significant according to the test that they used for the analysis. I would suggest changing the sentence into "This study did not show significant differences in any aspects...". I also suggest adding "significant" in the Results sentence of the Abstract.

Following this recommendation we added word/term “significant” and “examined” in Conclusion and Abstract: 
"There were no significant differences in any examined aspects of road..."

4) For the same reason, I would suggest changing the first sentence of the last paragraph of the Conclusion ("We conclude that females do not have more injury traffic accidents ..." into something like "We do not confirm that females have more injury traffic accidents..."

revised text expresses it more carefully: "We conclude that, in the Finnish traffic accident statistics for 1989-2002, females have not incurred more injury (or fatal) road traffic accidents on Fridays the 13th than expected, as a driver, bicyclist or pedestrian."

5) In the same sentence of the Conclusion, the authors suggest that Nayha's result on fatalities is due to random variation. In reality Nayha's study is quite precise (the confidence interval for the 1.61 estimate being 1.15-2.21), so chance (i.e. random variation) is an unlikely explanation for the result.
Please not our response to Reviewer 1: quite small number of cases (expected number 25, observed number 41) for 1971-1997 together with problems in his controls necessarily makes Nayha’s model quite labile.

Näyhä concludes: "As in all empirical studies, the possibility of a chance finding exists but seems rather improbable."

We suggest, in revision:
"We conclude that, in the Finnish traffic accident statistics for 1989-2002, females have not incurred more injury (or fatal) road traffic accidents on Fridays the 13th than expected, as a driver, bicyclist or pedestrian."

6) Were information on age available from the Finnish road accident data base of injury accidents? If so, maybe it is worth doing some analysis stratified by age.

Our matched design does not require it, very differently from Nayha’s design which should be able to control all kinds of changes in driver population.

What next?: Accept after discretionary revisions
Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No
Declaration of competing interests: None