

Are Female Hurricanes Deadlier than Male Hurricanes?

Background (Adapted from: "Female Hurricanes are Deadlier than Male Hurricanes, Study Says." by Holly Yan, CNN. June 3, 2014: <http://www.cnn.com/2014/06/03/us/female-hurricanes-deadlier/>)

Apparently sexism isn't just a social problem -- if you're in the path of a hurricane, gender bias might actually kill you. A study suggests people prepare differently for hurricanes depending on whether the storm has a male or female name. "Feminine-named hurricanes (vs. masculine-named hurricanes) cause significantly more deaths, apparently because they lead to a lower perceived risk and consequently less preparedness," a team of researchers wrote in the Proceedings of the National Academy of Sciences. In other words, a hurricane named "Priscilla" might not make people flee like a hurricane named "Bruno" would.

The study analyzed death rates from U.S. hurricanes from 1950 to 2012. "For severe storms, where taking protective action would have the greatest potential to save lives, the masculinity-femininity of a hurricane's name predicted its death toll," the study said. Hurricane Katrina in 2005, which left more than 1,800 people dead, was not included in the study because it was considered a statistical outlier. Neither was Hurricane Audrey in 1957, which killed 416 people. The study does note that both of those very deadly hurricanes had female names.

Why name hurricanes anyway? Giving hurricanes short, easy-to-remember names helps reduce confusion when two or more tropical storms are brewing at the same time, the National Hurricane Center said. For decades, all hurricanes were given female names in part because hurricanes were unpredictable, the study said, citing the "Encyclopedia of Hurricanes, Typhoons and Cyclones." "This practice came to an end in 1979 with increasing societal awareness of sexism, and an alternating male-female naming system was adopted," the report said.

Each year's list of hurricane names is alphabetical, alternating between male and female monikers. A U.N. World Meteorological Organization committee has already set up six years' worth of names. The lists repeat after each six-year cycle. "The only time that there is a change is if a storm is so deadly or costly that the future use of its name on a different storm would be inappropriate for obvious reasons of sensitivity," the National Hurricane Center said.

The hurricane data is given in an Excel Spreadsheet in the chapter 3 folder on Blackboard. It is also in our class data on Stat Crunch. It gives data that was used in the article *Female Hurricanes are Deadlier than Male Hurricanes* by Kiju Junga, Sharon Shavitta, Madhu Viswanathana, and Joseph M. Hil. In *Proceedings of the National Academy of Sciences of the United States of America*, May 2014.

*Note: hurricanes Katrina in 2005 (1833 deaths) and Audrey in 1957 (416 deaths) were removed from the data set.

Table Number: _____

Group Name: _____

Group Members: _____

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1. Suggest a graph that might be used to compare the death totals for Female and Male named hurricanes. Explain why you chose the graph that you did.

2. Calculate the mean, standard deviation, and five-number summary of the death totals for Female and Male named hurricanes.

Gender	Mean	S.D.	Min	Q1	Median	Q3	Max
Female							
Male							

- (a) Which measure, the mean or the median, do you think better represents a typical number of deaths from a hurricane? Why?

- (b) Based upon the numerical calculations, do you think that the Female named hurricanes are more deadly? Why? Or why not?

3. For each of Female and Male named hurricanes, determine whether there are any outliers.

4. Construct comparative boxplots on Stat Crunch that display the distributions of the number of deaths for Female and Male named hurricanes. Copy and paste your boxplots below. Be sure to label your graphs' axes.

5. Thoroughly interpret the boxplots. Compare and contrast center and spread for the two distributions. Then, state your opinion on whether or not it seems that the Female named hurricanes are more severe.

6. How could the fact that all hurricanes had female names until 1979 bias the results from Question 5?

7. Now, consider only the *Female* named hurricanes. Earlier, it was noted that hurricanes Audrey and Katrina were omitted from the analysis. Add the death totals from these two hurricanes to your dataset and redo the summary calculations:

Katrina/Audrey Included	Mean	S.D.	Min	Q1	Median	Q3	Max
No							
Yes							

Which measure, the mean or the median, do you think better represents a typical number of deaths from a hurricane? Why?