

Your Momma and Stats: So Much More than a Joke

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Intro/Outline

- Backstory...
- Complete the joke/insult:
Your momma is so bad at statistics...
- Tournament (or daddy)
- Classifying and analyzing students' entries
- Pedagogical benefits

Winner of the Consortium for
Advancement of Undergraduate
Statistics Education (CAUSE)
First **A- μ -sing Competition** for
humor in Stats featured at the
2007 U.S. Conference on
Teaching Statistics (USCOTS)

Tournament

- Each person here creates a repertoire of 5 jokes/ insults: “Your momma/daddy is so bad at statistics...”
- Copies of a stats textbook table of contents available...
- First a qualifying round eliminates the right number of players to result in a number that is a power of 2.
- Face-off one pair of contestants at a time; audience votes for each winner.
- Winners face off in a 2nd round and then successively until the final one-on-one produces a champion.

Your mom is so bad at statistics... ($\beta z \mu F p!$)

- She thinks Alpha was a character on the Little Rascals
- She thought “mu” was a sound a cat made!
- She thinks mu is a sound a Greek cow makes.
- She claimed all of the friction from mu was slowing her learning
- When you were talking about the population standard deviation “sigma”, she responded, “No, I don’t smoke!”
- She thinks beta1 and beta2 are the names of her son’s fish
- She thinks she is in the wrong class when she sees all the Greek letters
- When asked if n is large she gets out her ruler and measures the letter
- She thinks a discrete R.V. is a camper by itself
- She thought x-bar was a hot new nightclub
- She thought p-hat was a vegetable accessory
- She thought P-hat meant it was Pirates baseball season
- She thinks you wear a p-hat to the x-bar

Your mom is so bad at statistics ... ($\beta z \mu F p$!)

- She thought z score meant that you failed badly beyond an F
- She thought a z test was a sleep study
- She thinks z score is the French way to report the results of a game
- She started boiling water to perform a t test
- She thought a high P-value eventually turned into a Q-value
- When you told her to use the F test she said watch your language
- I told her to find F, and she said to look between E and G
- She thinks the alternative hypothesis was laughing at her (H_a)
- When someone asked her for an example of a H_0 , she went out to the tool shed
- She thinks H_0 is what Santa Claus says
- She thinks H_0 is the name of the girl who stands on the corner

Your mom is so bad at statistics... (puns)

- She wanted to know how to open a closed question
- She managed to fall into an open question
- She read The Scarlet Letter to learn about the Hawthorne Effect
- She thought a five number summary was a zip code
- She thinks the range is where the deer and the antelope play
- She thinks the interquartile range is something you cook on top of
- She found the median by driving down the highway
- When asked to find the mean height of the 7 dwarfs she replied, "Grumpy is 2 feet 7 inches tall."
- She thinks degrees of freedom refer to how warm it is outside and how little clothing she can get away with
- She thought minitab was a small bill
- She thinks mini-tab is something you get at a Grateful Dead concert

Your mom is so bad at stats (picture these)

- She thought a histogram was a medical procedure
- She thinks histogram is a new anti-histamine drug
- She tried to ring a bell curve
- She plays connect-the-dots with a scatterplot
- She thinks a scatterplot is a plan to run away
- She thinks unimodal is a model with a unibrow
- She thinks a boxplot is a place to bury old packages
- She thinks boxplots are areas to plant her flowers
- She thinks a stem-and-leaf plot is the ground under a tree in the fall
- She thought a two-way table was a type of furniture
- She stood in line for the uniform distribution

Your mom is so bad at stats...(more puns)

- She thought if X was binomial it dated both men and women
- She thinks degrees of freedom is part of our Constitution
- She thought the 68-95-99.7 Rule only applied to senior citizens
- When someone told her to use the Empirical Rule she asked why she should colonize a small developing nation
- She thinks 68-95-99.7 is an 80's Tommy Tutone song (867-5309)
- She thinks having a small p-value is a personal problem
- She watched Star Wars to understand ANOVA
- She thinks an ANOVA Table is something she can buy at Ikea
- She thought ANOVA was a car she drove in the 70's
- She thinks ANOVA is short for the team that beat Pitt in the elite 8
- She stopped doing ANOVA because her doctor said MSG was bad for her health

Your mom is so bad at stats...(still more)

- She thought the margin of error was on the side of the paper
- When asked about a relative risk, she said her uncle likes to skydive
- She thought a double blind study related to curtains
- She thinks a double-blind experiment involved Ray Charles and Stevie Wonder
- She thinks a population mean is a mob of angry people
- She never rejects the null hypothesis because she doesn't want to hurt its feelings
- She thinks it's hip to be chi-square.
- She thought a goodness of fit test involved a dressing room
- She brought a towel to pool a two-sample t test
- She thinks Simpson's Paradox was the episode where Homer tears a hole in time and space
- When I told her to do regression she started acting like a 2-year-old
- She thinks multiple regression is a psychological disorder

Your mom's so bad at stats (food for thought)

- When her teacher told her they'd be working on pie charts in the next class, she brought a fork
- When I asked what info she wanted to put in the pie chart she said "cherry"
- She thinks a two-sample t test is a contest between Lipton and Brisk
- She thinks chi-squares are cookies you have with tea
- She thinks cluster samples are a type of candy

Your mom is so bad at stats...(insults)

- She was a low outlier on every test
- She's 4 standard deviations below normal
- The probability of her getting the right stats answer is negative
- She's skewed left and right at the same time
- We can say with 95% confidence that she will never have a career in math
- There is strong evidence of no relationship between her thought processes and logic
- Ha would agree with Ho to reject her
- Your mama has more spread than a t interval
- Your momma's so big, when she enters a room she's not a sample she's the population
- Yo mama so hairy, her whiskers are nearly long enough to touch her outliers!

Your daddy is so bad at stats...

- He failed Stats 0200 and retook it just to get twice as many blue M&Ms
- When I told him that I found \bar{x} , he flipped out and said I was grounded for drinking
- When I asked how many degrees of freedom I should have, he said “none if I have anything to do with it!”
- He shaved the whiskers off his boxplot
- He asked yo mama for help

Your favorite legal guardian is so bad at statistics...

- He-or-she thinks that the probability of his-or-her winning the jackpot is definitely greater, given that he-or-she won \$3 yesterday and the jackpot is like \$386.43 million and it is really his-or-her time to shine and show you that he-or-she is really something special and can pick numbers better than everyone else

Your mom is so bad at stats... (*Error!*)

- She made a Type I and Type II Error---at the same time!
- She thought Type I and Type II Errors were diabetes
- She thought a Type II Error is what the dog did in the living room
- She commits Type III Errors

Your mom is so bad at stats (she's *wrong!*)

- She thought correlation=causation
- She tried to find the average of categorical data
- She tried to say that the correlation of two variables was +2
- She thinks a probability can be more than 1
- Her binomial random variables have 3 possible values
- She tells you to respond to an open-ended question, and then provides you with a list of responses to choose from
- She tried to organize a retrospective study---forward in time!
- She noticed that the researchers had taken control of the explanatory variable and thought it was an observational study!
- In a study of gender and smoking she makes gender the response variable
- She thought that a smaller sample size makes for more accurate results
- She doesn't know the difference between quantitative and categorical variables
- She doesn't know the difference between a histogram and a bar graph
- She thought histograms should have spaces between the bars like bar graphs
- She tries to use Excel to work with stats

Your mom is so bad at stats (she's *wrong!*)

- She relied completely on a point estimate!
- She thought a 99% confidence interval is narrower than a 95% confidence interval
- She thought a 90% confidence interval was more likely to contain an unknown population mean than a 99% confidence interval
- The true value is outside of her 100% confidence interval
- She thought you used t if σ was unknown
- She used s for the standard deviation of a population
- She said if the t value's small, then the p -value's small too
- She said that the p -value for a one-sided alternative was double the p -value for a two-sided alternative!
- She doesn't know the difference between paired and two-sample
- She thinks the F distribution is left-skewed
- She thought the chi-square sample size was large enough when all the values in a 2×2 table were less than 5
- She reported strong evidence of a weak relationship with $r=0.98$, $p\text{-val}=0.73$
- She used a C.I. when focusing on an individual

Your mom is so bad at stats... (*long!*)

- She doesn't know that the distribution of sample proportion has a mean of p and a standard deviation equal to the square root of p times $1 - p$ divided by n and a shape that is approximately normal if n times p and n times $1 - p$ are both greater than or equal to 10!

Your mom is so bad at stats (*is she wrong?*)

- She doesn't know that the $IQR = Q1 - Q3$
- She thinks variables can be quantitative or qualitative
- She thought we plot values of the explanatory variable along the horizontal axis and values of the response along the vertical axis
- She thinks a scatterplot is used to display the relationship between two quantitative variables
- She thinks the one-tailed P-value is half the two-tailed P-value

Your stats instructor is so bad at *teaching* statistics...

Her students think it's wrong to use a scatterplot to display the relationship between two quantitative variables!...

Not Just for Americans!

5 reasons why mothers could be dumb:

1. She would set the alternative hypothesis greater than zero when the relationship between the quantitative variables are negative.
2. She would say the relationship is strong for a small p-value.
3. She would say the evidence is weak for a low r value.
4. She would say that there is a positive relationship between two quantitative variables when the Confidence Interval is actually below 0.
5. She would use the population slope to calculate the Confidence Interval.

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- 1. My mom likes online shopping. She got a shirt online. When she looked at the comments, she lost her temper. Others criticized the quality of the shirt but she liked. She thought they lied. It is anecdotal.
- 2. My mom asks me: “Did you hang out with girls yesterday?” I can’t tell because it is sensitive. I can’t tell the truth till the day she doesn’t make fun of me.

Categories

- Notation
- Puns/word play
- Graphs/displays
- Insults
- Just the facts
- Defying Classification

She rejects the null hypothesis based on “eenie meenie minie mo”.

She has never once gone straight to lab, instead she always finds out the hard way by going to the recitation classroom first.

Just for fun?

- How many of you consulted the table of contents while creating your jokes?
- How many would have consulted a textbook itself if possible?
- Why is this noteworthy?
- Why make this an *end-of-semester* extra-credit assignment?

Review notation, special stats vocabulary, common mistakes

Your momma is so bad at statistics...

- that she makes me look good! 😊
- I always post them on my website, print them up hardcopy in a small font

(N.P. she rejects H_0 when her p-value is greater than 0.05)...

[students always seek out and read their own jokes!]

Going beyond poor taste into the realm of obscenity hasn't come up in my classes but if you fear it might with yours, you can warn students they get minus points for jokes that are too crude or nasty

Thank you!

If you incorporate *Your mom is so bad at statistics...*
into your prob/stats curriculum, please let me know---
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