STAT 021 S22 HW 8

Koji Flynn-Do

TOTAL POINTS

10 / 10

QUESTION 1

1 Description **3 / 3**

  ✓ **+ 3 pts** Correct

QUESTION 2

2 Identify possible mistakes **3 / 3**

  ✓ **+ 3 pts** Complete

   + 0 pts Incomplete

QUESTION 3

3 Connection to ASA guidelines **4 / 4**

  ✓ **+ 4 pts** Correct

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Homework 8: Bad Statistics

Koji Flynn-Do

I. The Analysis in Question

The paper I have is: [Beautiful parents have more daughters](#) by Satoshi Kanazawa. The research question is essential if there are differences in the sex of children by attractiveness of the parents. The paper finds that, as the title suggests, beautiful parents have more daughters. The author uses multiple binary logistic regression with the physical attractiveness of parents as the key predictor variable and the sex of the child as the response variable.

I selected this paper in part because I stumbled across it on Andrew Gelman's blog and in part because Gelman's criticism introduced me to a new kind of error: Type M errors, in which "the test statistic in magnitude exaggerates the true effect size, given that the statistic is statistically significant."[1]

2. The Mistakes

As Gelman writes:[2]

> These were studies with N=3000 where you'd need something like N=1,000,000 to learn anything useful.

The mistake, on this account, is not that the methods were inappropriate but that the interpretation was mistaken (although the methods might have inappropriate been — I'm not making a claim either way).

A memorable analogy for this comes from another one of Gelman's posts:[3]

> Their effect size is tiny and their measurement error is huge. My best analogy is that they are trying to use a bathroom scale to weigh a feather—and the feather is resting loosely in the pouch of a kangaroo that is vigorously jumping up and down.

So this is an example of misinterpreting statistical evidence and reading too much into statistical significance and regression coefficients without accounting for (dare I say) prior beliefs about the nature of the relationship and it's effect size.

3. Connections to Ethical Statistics

In my view, the this analysis violates (at least) principles A (Professional Integrity and Accountability) and B (Integrity of Data and Methods).[4] A, because the analysis does not "support valid and prudent decision-making with appropriate methodology." B, because Kanazawa has not "[sought] to understand and mitigate known or suspected limitations, defects, or biases in the data or methods."

I'm not sure about the question of intent — I cannot peer into Kanazawa's heart. But my impression (from spending less than 15 minutes reading about him) is that he seeks out provocative questions in evolutionary biology and then does bad statistics with them.

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