RECOGNIZING THE SHORTCOMINGS OF STATISTICS IN MEDIA: WHAT CAN NOVICES DO?

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CONTEXT & PURPOSE: The many shortcomings of statistics quoted in the media (mostly newspapers) have been found, such as various graphical deceptions. To promote statistical literacy, an introductory course on statistics should deal with some of these shortcomings. This study aimed at discovering examples of such shortcomings that would be accessible to novice students, and receiving feedback about their experience in finding similar examples in the media.

APPROACH: In order to select the possible shortcomings of statistics in media, as well as classic examples of graphical deceptions (e.g. Tufte, 2001), the teacher (the author of this poster) examined articles about statistics and society published in Sunday's columns of the Serbian national newspaper "Politika" (www.politika.rs). The selected shortcomings were discussed with undergraduate (K14) business students, who then searched for similar examples to describe them in their oral or written presentations.

OUTCOMES: The graphical shortcomings introduced to the students dealt with applying exaggerations along the y-axis, using distorted icons to represent changes in single variables, and displaying absolute instead of relative frequencies. Regarding the examined articles, the instruction focused on incomplete information about the studies undertaken (e.g., details about sample), particularly on the outcomes of binary logistic regressions (e.g., "smoking would increase the chance of having one disease by 50%", but no data on what probability would increase by 50% is given; Martignon (2016): both relative and absolute risks should be given). Despite a very short treatment, these shortcomings were well received by those K14 students, and appeared to be quite accessible to them. The students' search for similar examples showed that, contrary to the shortcomings due to incomplete information, the graphical shortcomings discussed were much harder to find.

IMPORTANCE & IMPLICATIONS: This contribution evidences that several kinds of possible shortcomings in statistics published in the media are quite accessible to novice students. Because classic graphical shortcomings are not often present in today's media, instruction may focus on shortcomings due to incomplete information, particularly on the outcomes of two or three typically exploited statistical analyses. (To trace the place(s) where shortcomings were generated, the following three steps may be examined: selecting news from news or statistical agencies; copying, adapting or elaborating the news selected; presenting the news in media. This elaboration, if needed, may be limited or not possible.) When similar examples cannot easily be found in media, students should be encouraged to prepare their own (more or less realistic) reports on statistics and society, and discuss their shortcomings, purposely made. Examining or writing media reports in critical ways would help students learn to communicate statistics (extrapolated from Gal, 2003).

References:

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Tufte, E. R. (2001). *The visual display of quantitative information*. Cheshire, CT: Graphics Press.

