

NJCU
EDTC 810 Statistics for Educational Research
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Assignment 1
Reading and Writing About Statistics

Part 1 – Mainstream Media

In his article *Why many 'C' students end up most successful*, published in April 2016 on Inc., Ilya Pozin presents an argument that college (or high school) grades are not predictors of the professional success. In the opening paragraph, the author states: “[t]he reality is that grades just aren't that important” (Pozin, 2018).

The article continues with a selection of success stories of the famous people who either were college-dropouts or poor students. The list includes American politicians Al Gore, John McCain, John Kerry, Joe Biden, and George W. Bush. The list is topped with Richard Nixon, who presents a counter argument for being an excellent student (Pozin, 2018).

The follow-up section focuses on professionally successful people different from politicians. Bill Gates, Mark Zuckerberg, and Steve Jobs join the company of Thomas Jefferson, John D. Rockefeller, Walt Disney, and a few others. The author alludes to the “very long list of brilliant or ambitious individuals” but fails to present any statistical data supporting the claim (Pozin, 2018).

The next paragraph opens with the statement that test grades poorly measure just a few types of intelligence out of “many different types” that we have. No numeric data is provided to support this claim. It continues with the list of skills and abilities that vital to the professional success, but the grades don't measure them (Pozin, 2018). No statistical analysis supports this claim.

The last paragraph concludes the article with the role of ambition in the overall success. It states that “[f]or every CEO of a major company that graduated with a 4.0 GPA, there are scores

more who did not". There were no references to the source or interpretations of this piece of data (Pozin, 2018).

Overall this article presents a weak analysis mostly based on the common knowledge and not on the collected data. The conclusion is stated, but it does not use a statistical toolset attesting to the validity of the presented argument (Pozin, 2018).

Part 2 – Scholarly Article

Mirka Saarela and Tommi Kärkkäinen from the University of Jyväskylä in Finland analyzed student performance using sparse data of core courses. They aimed to investigate whether specific IT skills gained through the core Computer Science curriculum is a strong predictor of the overall academic success (Saarela & Kärkkäinen, 2015).

The datasets were obtained from 13,640 historical records of Computer Science students between August 2009 and July 2013 at the Department of Mathematical Information Technology (DMIT) at the University of Jyväskylä in Finland. The studied population consisted of 1,040 students ($n=1,040$) attending 1,271 different courses. In total, 64,905 academic credits were earned, 64% of which were obtained from non-major courses (Saarela & Kärkkäinen, 2015).

One of the metrics that the researchers used was the relationship between the average credits per semester and the earned grades. It was assumed that the quality of the academic work is reflected in the earned grade, and the quantity is reflected in the number of credits earned. It was determined that the quantity and the quality in general (non-major) coursework did not correlate, with the correlation coefficient between the average credits per semester and the earned grade per student being close to zero (0.0848). The per-student values were plugged in

the plot resembling a turned bell curve with normally distributed data (Saarela & Kärkkäinen, 2015). It supported the argument that the earned number of credits does not correlate to the level of the earned grades in general curricula.

In the follow-up section of the study, the researchers investigated the correlation between the mean grade of a student to the mean number of credits per semester in each of the twelve Computer Science courses required for the major. For each calculated correlation, a p-value was considered, with the null hypothesis stating that no correlation exists. Additionally, the researchers implemented an asterisk-based p-value rating system with the number of asterisks indicating the strength of evidence (Saarela & Kärkkäinen, 2015). A single asterisk indicated “a borderline to be significant” ($p \leq 0.05$); a double asterisk indicated “statistically significant” ($p \leq 0.01$), and a triple asterisk indicated “a highly statistically significant” ($p \leq 0.005$).

It was observed that the student who earned a high grade in the four specific courses tend to earn high grades in other courses. The paper states that “the correlation between the grades for these four courses and the average grade of the student is in all cases highly statistically significant as the p-values for testing the hypothesis of no correlation are all smaller than 0.005” (Saarela & Kärkkäinen, 2015). The null hypothesis of no correlation was rejected.

It appears that the conclusion about a statistically significant correlation between the earned grades in core major courses and the average grade of the student is drawn using substantial statistical analysis including but not limited to the p-value. Other statistical tools are incorporated in the study to prove that the grades earned in the core major courses may serve as a predictor in the overall academic performance.

Part 3 - Conclusion –Compare/Contrast & Analysis

Both publications evaluate college grades as a predictor of success but differ in how they define successful outcomes. The scholarly article interprets strong academic standing a successful outcome, depicted as quality. The mainstream media article argues that earning good grades does not correlate to success in a professional career.

While the scholarly article uses statistical analysis to attest to the validity of the claim, the mainstream media article lacks statistical analysis but draws conclusions based on several specific examples conveniently chosen for the occasion. Had a formal study been conducted, these specific cases could have been the examples of outliers in the dataset.

The scholarly article presents the argument using the three-level ranking system of the statistical significance and drawn the conclusion based on that. The mainstream media article presents the personal opinion of the author (possibly, shared by others), with no referencing of sources or implementing the analysis of data. The conclusion is skewed to a single viewpoint, extensively expressed by the author.

Sources:

Saarela, M., & Kärkkäinen, T. (2015). Analyzing Student Performance using Sparse Data of Core Bachelor Courses. *Journal of educational data mining*, 7 (1), 3-32. Retrieved from <https://jyx.jyu.fi/bitstream/handle/123456789/46677/saarelakarkkainenanalyzingstudentperformanceusingfinalversion.pdf;sequence=1>

Pozin, I. (2018, October 15). Why Many 'C' Students End Up Most Successful. Retrieved from <https://www.inc.com/ilya-pozin/why-many-students-with-bad-grades-end-up-successful.html>