Péter Kovács (University of Szeged)
Klára Kazár (University of Szeged)
Éva Kuruczleki (University of Szeged)
Dávid Árvai (University of Szeged, Faculty of Economics and Business Administration, Department of Statistics and Demography)

Enhancing statistical culture – The Role of the University and Education

Topic 5 – Who uses statistics, what do they need and how should we engage with them?

Keywords: visualization, statistical literacy, education

Introduction

Statistical literacy has a key importance in describing and understanding phenomena in real life. The relevance of statistical literacy is indicated by several definitions and researches which are well established in the statistical literature.

A very important question is the role of universities and educational institutions to improve statistical literacy. Education has a mediator position: can develop new techniques to show data, apply and disseminate new trends, solutions of business life, and use statistical data, but do we know, apply these trends, applications, do we self-develop ourselves? Larger and larger amount of data, data sources, visualization tools are available on the Internet, but the misuse of these tools can lead to misinterpretations.

The question arises: how could we show the story behind the data, how could the users understand data and charts. Who are the users of these sources? Nowadays' students are the members of the Y-Z-alpha generations, who are technology oriented, use mobile and IT devices, smartphones easily , like team work based, entertaining and visualization based tasks in class, so the usage of IT tools, databases and visualization has important role in the education.

Methods / Problem statement

The first goal of this presentation is to review the actual challenges of teaching statistics (expected outcome and entrance level of students). The second goal is to present the trends of visualization, show and analyze the applicability of some interactive visualization tools such as Gapminder, HCSO, Eurostat, or sources and solution in line with big data (table map, heat map, mosaic map, etc.).

Conclusions

When we use most of the online visualization tools, we need to know in advance what we are looking for. Despite of the availability of the metadata, even though the visualizations can help to understand the data, these are not correct perfectly and without a helping hand it's difficult to understand.

Furthermore several times the use of that tools requires experiences on IT, programming, and data management. The visualization has less importance in the introductory statistic courses, where the focus is on the traditional data visualization techniques (for instance bar, pie, line chart), but the business spehre concentrates on newer solutions (many of them is a redesign of the traditional charts under a new name).

The risk of it is that instead of statistics the students probably pair the practical visualization with other subjects (for instance marketing), and they cannot see the importance of statistics. On the other hand teaching traditional techniques affects the understanding of visualization's background. If we want to keep

the traditional techniques and incorporate new techniques into the curricula, we should drop out something else because of the limited cognitive capacity of the users and the size of the curricula.