

Gap between State Matura and School Grades

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Abstract. The relationship between high school final grades and grades on State matura exams was observed using a different and more informative approach - gap analysis. The results show that there is more discord between vocational schools grades with the State Matura grade being lower than the one graduating students obtained as their final high school grade.

Keywords. gap, school grades, State Matura grades, NCEEE, education.

1. Introduction

State Matura was held for the first time in Croatia during school year 2009/2010. Matura covers a set of exams - mother tongue, mathematics and foreign language. It is a final high school exam as well as the most important criterion for admission/entrance to university. After taking the exam, graduates are presented both with their raw score on the test and with the grade on a scale from one to five (one meaning failing and five meaning excellent). The cut-offs for the grades on State Matura exams are determined using a modified Angoff standard-setting method. Separately, students are also graded on their schoolwork by their school teachers at the end of their senior year of high school. These “school” grades (also on a scale from 1 to 5) are used as one of the criteria for entrance to faculty.

The relationship between these two types of students’ grades (that play such a major role in determining the graduate’s admission to university) is always a cause for great attention. Until now, the only method used for testing the relationship was correlation analysis. In this poster, we will try to show the relationship between these two criteria by using a different and more informative approach - gap analysis. Gap analysis is most frequently used in medical research rather than in educational studies, but, we will show how it can be successfully adapted to educational research. For this purpose, data

was analysed using paired-samples t test (sometimes called the *correlated-samples t test* or *matched samples t test*) with JMP[®] Matched Pairs platform [2].

2. Methodology

The graphical displays and analysis were generated using JMP[®] for Windows, Version 8.0.1 SAS Institute Inc., Cary, NC, 1989-2009.

3. Results and discussion

The global distributions of the difference (ie. the gap) between grades on the State Matura exams and final senior year high school grades are shown in Figure 1. The distributions are unimodal, quasi-symmetric and have a Gaussian-like pattern with thin tails. For most of the students on the “advanced” level of Croatian language and Mathematics, the gap was equal to 0 and -1 (Fig. 1) meaning that school grades are equal or better than the grades on the State Matura exams by 1 point. The situation is directly opposite on the “basic” level for these two exams (i.e. State Matura grades are better or higher).

Matched pairs plots with mean difference of grades on the horizontal (x) axis and the gap on vertical (y) axis (by school program) is shown in Figure 2.

The two major types of schools in Croatia are gymnasium and vocational schools which are then divided into different sectors as are listed in Figure 2 (legend). Global grade means of high school and State Matura results, shown by the red vertical line were a bit higher for students taking advanced level Croatian and Mathematics then for those taking the exams on the basic level. Inspection of the graph for the basic level Mathematics exam, reveals that gymnasium students (especially in the natural sciences and math program) had the largest shift in the positive direction. On the advanced level Mathematics exam, the same gymnasium

program was the only one among gymnasium and vocational programs whose grade on State Matura was on average the same as the one in school. Students attending other programs mostly obtained a grade that was lower than the one they had as their final school grade.

On the Advanced level Croatian language exam, the only program whose average grade on State Matura was in accordance to their school grade was classical gymnasium. All other programs obtained a grade somewhat lower on State Matura exam. The grades on State Matura were higher for most programs on the basic level of the Croatian language exam except for the following vocational programs: agriculture, forestry, personal services and transport. To

conclude, more discord was observed in vocational schools when comparing school and State Matura grades with vocational school grades being higher.

4. References

- [1] State matura and national assessment reports; 2007-2010. <http://www.ncvvo.hr> [01/31/2011]
- [2] Lehman A., O'Rourke N., Hatcher L., Stepanski E.J. JMP[®] for Basic Univariate and Multivariate Statistics. Cary, NC: SAS Institute Inc; 2005.

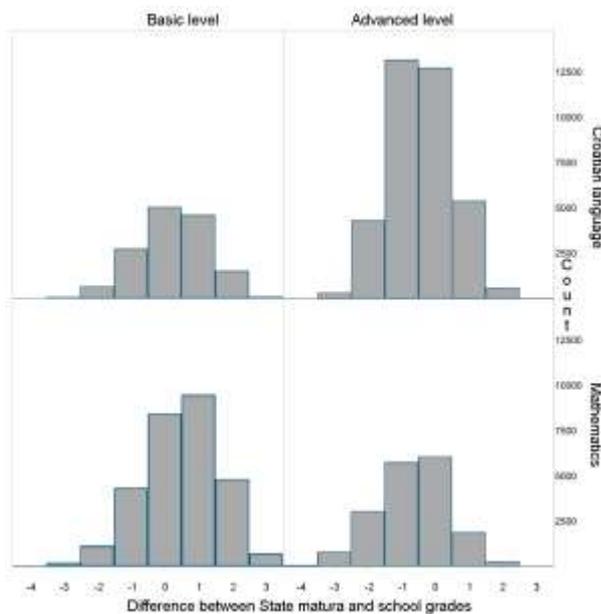


Figure 1. Differences between the school and state matura grades by subjects and levels

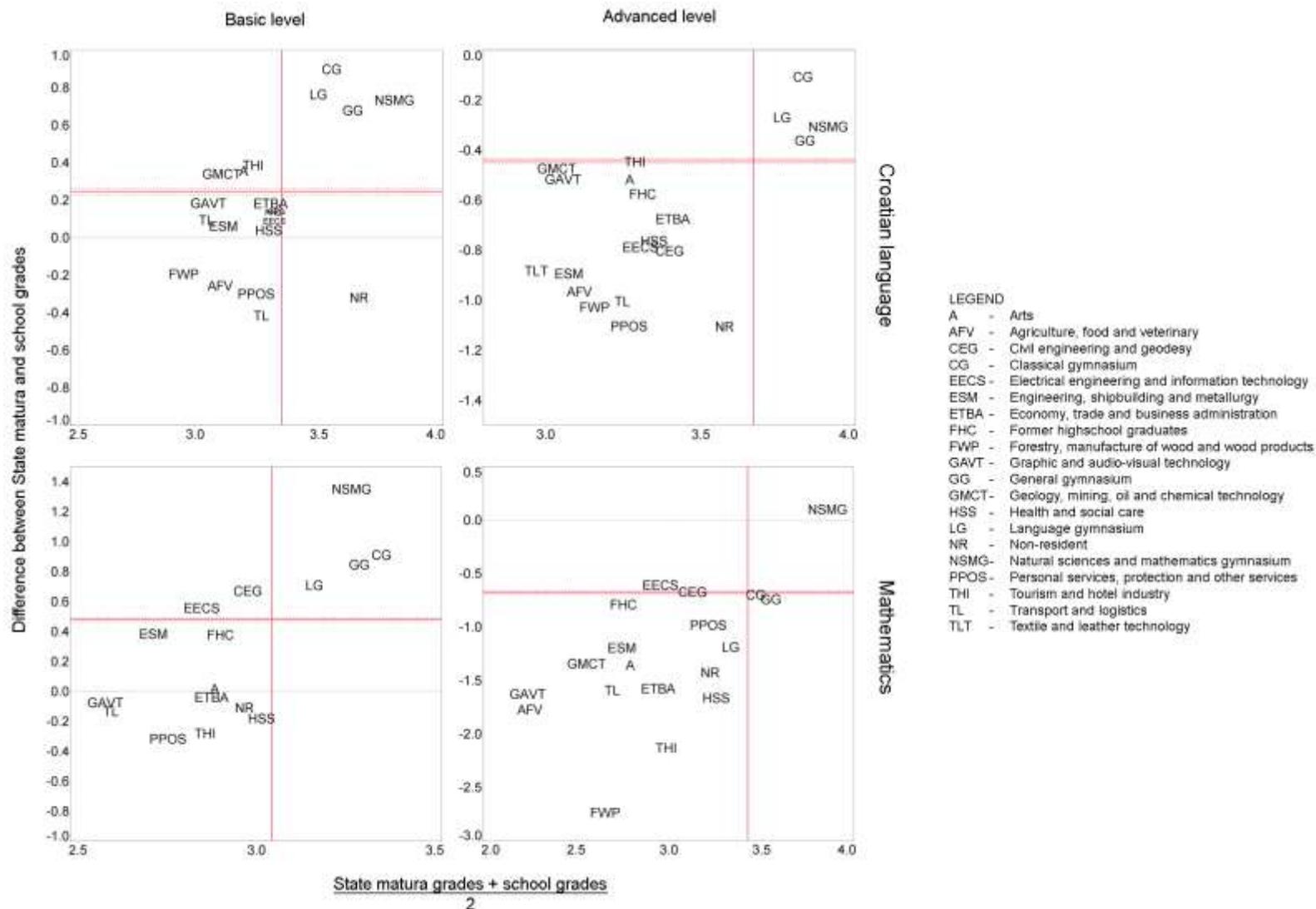


Figure 2. The matched pairs plots show a mean of grades and a difference between the school and state matura grades by subjects and levels within different school programs*, where the mean difference is shown as the horizontal line, with the 95% confidence interval above and below shown as dotted lines

* For better visibility, we show only paired *t* plot segments with subgroup data in it. Please note that the axes scales are different on each plot.

