HKDSE Liberal Studies

Statistical Moderation Using School Exam Results for Independent Enquiry Studies
Why Moderation

- Teachers know their students well and are best placed to judge their relative performance.
- However, they may not be aware of the standards of performance across all schools.
- Some schools may be harsher or more lenient in marking and/or use a narrower or wider mark range.
- Standardization across schools to ensure fairness.
Basic Principles for Statistical Moderation

- In accordance with 2012 LS School-based Assessment Teachers’ Handbook:
  - Statistical moderation based on school exam results
- Nature of IES assessment
- Moderation based on exam results applicable to most schools
- Some schools’ adjustment based solely on exam results may not fully reflect students’ actual performance in IES
Sample Review

- Purposes of sample review:
  - Giving Feedback to schools
  - Outlier detection
    - Identifying those schools where the standard of IES work is significantly better/worse than their exam results suggested
  - For securing international recognition
  - 6 Task samples to be collected in S6
  - Task type to be collected will be confirmed in Oct 2010
Technical Aspects of Moderation Process

**Two parts** in calculating the moderated project marks for a student

- Determine the **base marks** (performance level) of that school
- Determine the **relative marks** of the student within his/her school; (i.e. relative performance)

Moderated project marks =

Base marks for the school (+)
Relative marks of the student within the school
Part 1: Base Marks for a (Group) School:

Let \( x \) be Raw SBA Mark and \( z \) be School Exam. Mark

Base marks of a school depends on

(i) Mean of raw project marks of all schools: \( x_{mean} \)

(ii) Correlation * (Difference between School Exam. Mean and Overall Exam. Mean)
Part 1: Base Marks for a School

How to derive the base marks for a school?

\[ x_{\text{mean}} + \beta(\bar{z} - \bar{z}_{\text{mean}}) \]

\( x \)

\( \bar{z} = \text{School exam. mean} \)
Part 2: Individual Student Project Marks
(Relative to His School Level)

\[(x - \bar{x}) \frac{S_p}{S_x}\]

- Project marks of a student
- Mean of project marks of the school
- A factor based on the ratio between std deviation (sd) of moderated project marks and sd of raw project marks
Part 2: Individual Student Marks within a School (An example)

\[
(x - \bar{x}) \frac{\sqrt{\left( \frac{s^2_x}{S_x} + \frac{s^2_z}{S_z} \right)}}{S_x}
\]

Let say, a factor based on S.D.

Sz = 20
Sx = 10
Sp = \sqrt{\left( \frac{s^2_x}{S_x} + \frac{s^2_z}{S_z} \right)}/2 \approx 16

So, the factor is approx. 1.6.

If the student gets 1 project mark higher than the school project mean, he will finally have 1.6 marks in this part.
Moderated project mark of a student

\[ x_{\text{mean}} + \beta (\bar{z} - z_{\text{mean}}) + \frac{(x - \bar{x}) s_p}{s_x} \]

Part 1: Base Mark for Each School
Part 2: Individual Marks in a School
This school gets a higher base marks than the average! So, shift to the right
Features of the Moderation Method

- Internal ranking would not be changed
- The statistical moderation method would consider the empirical correlation between examination results and SBA results
- Suppose that teachers tend to give high marks to their own students; under the moderation method, such an effect would be eliminated when calculating the moderated marks
- Sample review to help identify outlier schools
- For outlier schools, adjustment will be carried out, if necessary, by considering a no. of factors, such as moderated IES marks based on exam results and sample review results so as to reflect the actual IES performance
THANK YOU