

## Often-used Variables on SACMEQ Archive

The purpose of this document is NOT to present all the derived variables that exist in the SACMEQ archive. Rather, it will list some of the often-used variables. The entire listings of all the variables have been included in 1A01.xls (for SACMEQ I) and 2A02.xls (for SACMEQ II).

### **Variables related to test scores**

There are a variety of variables that are related to test scores. These are categorized in three groups: (1) standardized individual scores; (2) pass/fail information regarding cut-off points; and (3) hierarchical levels of competency.

#### (1) Standardized individual scores

For the SACMEQ II datafiles, individual scores based on the Rasch logit scores have been converted into standardized scores. The two most used variables in this area are:

- ZRALOCP (Standardized Reading Location for SACMEQ II Pupil) and
- ZMALOCP (Standardized Mathematics Location for SACMEQ II Pupil).

The means of these scores for the SACMEQ II Pupils have been set at 500 and the standard deviations at 100.

The variables for standard scores for teachers are:

- ZRALOCT (Standardized Reading Location for SACMEQ II Teacher) and
- ZMALOCT (Standardized Mathematics Location for SACMEQ II Teacher).

These teachers' standard scores have been put on the same scale as the pupils' standard scores, and therefore comparable.

For the pupils, two more variables have been created, based on the essential items. The scoring was done only using the items that have been identified as "essential" in each participating country.

- ZRELOCP (Standardized Reading Location for SACMEQ II Pupil with essential items) and
- ZMELOCP (Standardized Mathematics Location for SACMEQ II Pupil with essential items).

For the SACMEQ I datafiles, there was only a Reading literacy test for the Pupils. The standard scores for Pupil Reading are:

- XRALOCP (Standardized Reading Location for SACMEQ I Pupil with all items)
- XMALOCP (Standardized Mathematics Location for SACMEQ I Pupil with all items).
- XRELOCP (Standardized Reading Location for SACMEQ I Pupil with essential items) and
- XMELOCP (Standardized Mathematics Location for SACMEQ I Pupil with essential items).

SACMEQ I variables have been also put on the same scale as the SACMEQ II Pupil Reading (all-item) test, and therefore they are also comparable.

Table 1: List of standardized individual scores

	Variable Name	
	<b>SACMEQ II</b>	<b>SACMEQ I</b>
Standardized pupil Reading score on all items in the study	ZRALOCP	XRALOCP
Standardized pupil Reading score on essential items in the study	ZRELOCP	XRELOCP
Standardized pupil Mathematics score on all items in the study	ZMALOCP	
Standardized pupil Mathematics score on essential items in the study	ZMELOCP	
Standardized teacher Reading score on all items in the study	ZRALOCT	
Standardized teacher Mathematics score on all items in the study	ZMALOCT	

## (2) Pass/fail information regarding cut-off points

Based on the SACMEQ I minimum and desirable cut-off points in Reading of seven countries, a SACMEQ Reading minimum and desirable cut-off points have been established, that can be applied to SACMEQ II pupils, SACMEQ II teachers, and SACMEQ I pupils. Each individual has been assigned as 'pass' (code 1) if he/she reaches those points and 'fail' (code 0) otherwise.

- ZMINRDP (SACMEQ II Pupil reaching the SACMEQ minimum Reading level) and
- ZDESRDP (SACMEQ II Pupil reaching the SACMEQ desirable Reading level).
- ZMINRDT (SACMEQ II Teacher reaching Pupils' SACMEQ minimum Reading level) and
- ZDESRDT (SACMEQ II Teacher reaching Pupils' SACMEQ desirable Reading level).
- XMINRDP (SACMEQ I Pupil reaching the SACMEQ minimum Reading level) and
- XDESRDP (SACMEQ I Pupil reaching the SACMEQ minimum Reading level).

Since these cut-off points have been established based on the actual proportion of pupils reaching in each country in SACMEQ I, only Reading scores have been used to establish the pass/fail information for SACMEQ II pupils and teachers.

Table 2: Pass/fail information regarding cut-off points

	Variable Name	
	<b>SACMEQ II</b>	<b>SACMEQ I</b>
Pupil reaching the minimum level for Reading	ZMINRDP	XMINRDP
Pupil reaching the desirable level for Reading	ZDESRDP	XDESRDP
Teacher reaching the pupils' minimum level for Reading	ZMINRDT	
Teacher reaching the pupils' desirable level for Reading	ZDESRDT	

### (3) Hierarchical levels of competency

The process of ‘skills audit’ of all the test items has generated descriptions of eight levels of increasing competence in Reading and Mathematics. Each respondent has been given a score that indicates at which competency level he/she is operating. These level descriptions have been applied to scores from SACMEQ II pupils, SACMEQ II teachers, and SACMEQ I pupils.

- ZRALEVP (SACMEQ II Pupil Reading competency level) and
- ZMALEVP (SACMEQ II Pupil Mathematics competency level).
- ZRALEVT (SACMEQ II Teacher Reading competency level) and
- ZMALEVT (SACMEQ II Teacher Mathematics competency level).
- XRALEVP (SACMEQ I Pupil Reading competency level) and

The codes in each variable indicate the following competency levels:

#### Reading

- 1: Pre Reading
- 2: Emergent Reading
- 3: Basic Reading
- 4: Reading for Meaning
- 5: Interpretive Reading
- 6: Inferential Reading
- 7: Analytical Reading
- 8: Critical Reading

#### Mathematics

- 1: Pre Numeracy
- 2: Emergent Numeracy
- 3: Basic Numeracy
- 4: Beginning Numeracy
- 5: Competent Numeracy
- 6: Mathematically Skilled
- 7: Concrete Problem Solving
- 8: Abstract Problem Solving

Table 3: List of hierarchical levels of competency

	Variable Name	
	SACMEQ II	SACMEQ I
Pupil Reading competency level	ZRALEVP	XRALEVP
Pupil Mathematics competency level	ZMALEVP	
Teacher Reading competency level	ZRALEVT	
Teacher Mathematics competency level	ZMALEVT	

## Essential weight variable

Before conducting any analysis, it is necessary to apply the pupil level weight for all the cases in the archive. Please use **PWEIGHT2** for the SACMEQ II data and **PWEIGHT1** for the SACMEQ I data.

## Essential independent variables

The following variables are often used as the independent variables when comparing means of different sub-groups of people. Some of them are original variables included in the questionnaires.

1. Country name (**COUNTRY** in both studies) – This is an alphanumerical (string) variable containing the first three letters of each participating country. For example, BOT indicates Botswana, and ZIM indicates Zimbabwe.
2. Educational region name (**IDEDREG** in both studies) – This is another alphanumerical (string) variable containing (i) three letters for country, and (ii) three letters indicating the educational regions in the country. This may or may not coincide with the strata variable that has been used for stratification during the sampling design.
3. Identification for stratification (**IDSTRAT** in both studies). It shows the stratification variable when the sample of schools was drawn. For the use with the IIEPJack, use **JSTRAT** for SACMEQ II (**IDSTRAT** is OK for SACMEQ I).
4. School identification code (**IDSCHOOL** in both studies). For the use with the IIEPJack, use **JSCHID** for SACMEQ II and **SCHID** for SACMEQ I.
5. School location (**SLOCAT** in SACMEQ II and **SLOCATIO** in SACMEQ I) – This is an original variable for the location of school (isolated, rural, small town, or large city). See another section “Derived variables related to school background” for the combined school location.
6. Pupil gender (**PSEX** for both studies).
7. Teacher gender (**XSEX** for SACMEQ II Reading teachers, **YSEX** for SACMEQ II Mathematics teachers, and **TSEX** for SACMEQ I teachers).

## Derived variables related to pupil background

1. Pupils age in months (**ZPAGEMON** for SACMEQ II and **XPAGEMON** for SACMEQ I) – it has been rounded to the nearest month.
2. Number of books at pupil’s home (**ZPBOOKSH** for SACMEQ II and **XPBOOKSH** for SACMEQ I) – based on the categorical variable **PBOOKSHM**, estimation has been made taking the mid-values for each interval.
3. Total possessions at pupil’s home (**ZPTOTP13** for SACMEQ II and **XPTOTP13** for SACMEQ I) – Maximum is 13, which corresponds to the common items included in SACMEQ I and II studies.

4. Pupil's general home quality (ZPHMQUAL SACMEQ II only) – It varies from 4 to 16. It was made out of lighting, floor, wall, and roof of the house.
5. Pupil's SES (ZPSES SACMEQ II only) – Maximum is 15. It was created out of home possession, parents' education, lighting, floor, wall, and roof of the house.
6. Regularity of meals (ZPREGME for SACMEQ II and XPREGME for SACMEQ I) – It varies from 3 to 12.
7. Average parents' education level (ZPFMEDMN for SACMEQ II and XPFMEDMN for SACMEQ I) – Using the separate question regarding mother's and father's education levels, first the responses such as "I do not know" and "I do not have mother/father" were eliminated, then an average was calculated between these two questions.
8. Home interest composite (ZPHMINT for SACMEQ II and XPHMINT for SACMEQ I) – It ranges from 5 to 15. It was based on: recoded PHMWKDON, recoded PHMWKHLP, average of PREAD and PCALC, average of PQUESTR and PQUESTM, and PLOOKWK.

### **Derived variables related to teacher background**

1. Teacher training level (ZXQPROF for SACMEQ II Reading teacher, ZYQPROF for Mathematics teacher, and XTQPROFE for SACMEQ I Reading teacher)
2. Ratio of classroom books per pupil (ZXYBKUP for SACMEQ II and XTBOOKRA for SACMEQ I)
3. Total class resources (ZXCLRES8 for SACMEQ II Reading teacher, ZYCLRES8 for Mathematics teacher, and XTCLRES8 for SACMEQ I Reading teacher) – Max 8
4. Total class furniture (ZXCLFURN for SACMEQ II Reading teacher, ZYCLFURN for Mathematics teacher, and XTCLFURN for SACMEQ I Reading teacher) – Max 5
5. Teaching hours per week (ZXHRTEAC for SACMEQ II Reading teacher, ZYHRTEAC for Mathematics teacher, and XTHRTEAC for SACMEQ I Reading teacher) –
6. Frequency giving written reading test (ZTTESTRE for SACMEQ II Reading teacher, ZTTESTMA for Mathematics teacher, and XTTEST for SACMEQ I Reading teacher)

### **Derived variables related to school background**

1. School age (ZSESTABL SACMEQ II only) – It was created based on the information about the year the school was established.
2. School isolation index (ZSDIST for SACMEQ II and XSDIST for SACMEQ I) – It is the average distance from school to clinic, road, public library, book shop, and secondary school.

3. School location (ZSLOC for SACMEQ II and XSLOC for SACMEQ I) – “isolated” and “rural” were combined, and “small town” and “large city” were combined.
4. Pupils-teacher ratio (ZSPTRATI for SACMEQ II and XSPTRATI for SACMEQ I) – Total number of pupils divided by the total number of teachers.
5. Maximum number of pupils among shifts (BIGSHIFT for both studies)
6. Number of shifts (ZSSESSNU for SACMEQ II and XSSESSNU for SACMEQ I)
7. Average classroom areas per pupil (ZSSPACE for SACMEQ II and XSAPRATI for SACMEQ I) – total classroom areas divided by BIGSHIFT (maximum number of pupils)
8. Pupil-toilet ratio (ZSTRATIO for SACMEQ II and XSTRATIO for SACMEQ I) – BIGSHIFT divided by the total number of toilets.
9. Total school resources (ZSRTOT22 for SACMEQ II and XSRTOT22 for SACMEQ I) – Maximum is 22, which corresponds to the number of resource items that were commonly used in SACMEQ I and II studies.