

ESPAD 07

The European School Survey Project on Alcohol and Other Drugs

Sampling method (Hungary)

(by Tamas Domokos)

1. Population of students from which sample was drawn

Sampling frame

Based on the target population we defined the sampling frame. The sampling frame of Hungarian ESPAD 07 consists of the full-time students who turned sixteen in the calendar year of 2007 in grades 8, 9, and 10 in public education. The sampling frame of the survey refers to all students that have a known, non-zero probability of being included in the sample. The primary sampling unit was class and not student, and each student of the sampled class - who was present in class on the day of the survey administration – were asked.

Geographical area of the survey

The survey was conducted on the whole area of Hungary, on a national representative sample. A special emphasis was given to the capital. The reason for over representing Budapest was the purpose of creating reliable, individual sub-sample of analysis in order to examine the changes between 1992 and 2007. Budapest was also over represented in 1995, 1999 and 2003. A survey conducted in 1992 also gathered comparative data in the capital. Thus, we can compare the results of 1992, 1995, 1999, 2003 and 2007 in the capital separately, and follow the tendencies from the beginning of the 90's until now.

Grades/levels where the target age group (16 years old) is taught and grades/levels planned to be included in the sample

Total number of 15-year-old students by grades and types of schools in full-time education in October 1st as the nominal date of the official data collection¹, 2005/2006

	Primary general schools	Secondary general schools	Secondary vocational schools	Vocational schools	Total	% of total 15-year-old population
grade						
1	23				23	0,02
2	16				16	0,01
3	55				55	0,04
4	145				145	0,12
5	543				543	0,44
6	1228				1228	0,99
7	3577	13			3590	2,89
8	9280	189			9469	7,61
9		26609	28203	15338	70150	56,38
10		17317	15773	5811	38901	31,27
11		104	125	51	280	0,23
12		1	14	0	15	0,01
Total	14867	44233	44115	21200	124415	100

Source: Hungarian Central Statistical Office, preliminary data from Living Standards and Human Resources Statistics Department of HCSO

On the basis of the actually available 2005/2006 data the highest proportion of 15-year-old students is available in grades 9 and 10. In 2006 October the proportion of 15-year-old students was 56,4 % in grade 9 and 31,3 % in grade 10. In grade 8 the proportion of the target population was 7,6 %. It means, that in these three grades we could reach 95 % of total 16-year-old population in the full-time education during the data collection.

Approximate number of children born in 1991 who are expected to be in school in March 2007

	Number of population	Percentages of the target population
Total number of population born in 1991**	125109	100 %
Number of 16-years-old students in full-time education in public and private institutions together	124415	99.4
Number of 16-years-old students in full-time education in 8-9-10 grades (without special vocational schools)	118520	94.7

** Demographical Yearbook, KSH 2005. Population on January 1, 2005.

¹ 75 percent of this population will complete 16th year during the next calendar year. It is not a problem in the case of grade 9 and 10, but in grade 8 we have to correct the case number with this proportion. The estimated number of 16-year-old student in grade 8 during the data collection is 7,109 at national level.

On the basis of the 2005/2006 yearly statistics the number of 16-year-old students attending 9-10 grades of full-time secondary school is 109051. It is the 87,6 % of the target population. We included in the survey the 16-year-old population learning in the 8 grade, and we excluded students in special vocational schools our sample represents 95,3 % of 16-year-old school population and approx. 94,7 % of the total population born in 1991.

2. Sample

Schools often cannot be categorised as general schools and specialised secondary schools, or primary schools and grammar schools or specialised secondary schools since they can be under the same management, resulting that the school belongs to a mixed type. In Hungary 2341 institutions are performing one task only (clear profile) and 3638 institutions are performing several tasks (mixed profile). Even in these institutions we can differentiate between classes. Thus instead of categorising according to school type, in Hungary it is more useful to do it according to the class level. The base of the sampling procedure was this level too.

Number and types of school-sites (schools) in the country

Type of schools	Institutions performing one task only	Institutions performing several tasks	Total
Primary general schools	1793	1821	3614
Secondary general schools	255	506	761
Secondary vocational schools	235	696	931
Vocational schools	55	482	537
Special Vocational schools	3	133	136
Total	2341	3638	5979

Number and types of schools-sites in the country by region

Type of school-sites	Budapest	Western-Regions ²	Eastern-Regions ³	Total
Primary general schools	391	1607	1616	3614
Secondary general schools	189	272	300	761
Secondary vocational schools	201	349	381	931
Vocational schools	85	211	241	537
Special Vocational schools	20	61	55	136
Total	886	2500	2593	5979

² Central Region without the Capital, Central Transdanubia Region, Western Transdanubia Region, Southern-Transdanubia Region

³ Northern Hungary Region, Northern Great Plain, Southern Great Plain

Number and types of classes by region (8-9-10 grade)

Type of schools	Budapest	Western-Regions ⁴	Eastern-Regions ⁵	Total
Primary general schools	734	2242	2308	5284
Secondary general schools	1029	1447	1616	4092
Secondary vocational schools	744	1264	1459	3467
Vocational schools	283	955	1105	2343
Special Vocational schools	66	182	162	410
Total	2856	6090	6650	15596

Average number of students per class by grades

Type of schools	8 grades	9 grades	10 grades	Total
Primary general schools	20,04			20,04
Secondary general schools	28,95	30,27	30,02	30,04
Secondary vocational schools		30,68	29,08	29,85
Vocational schools		26,33	23,78	25,16
Special Vocational schools		12,49	11,38	11,98
Total	20,58	28,61	27,65	25,40

Number and types of classes by grade and school were chosen

Type of schools	Grade 8.	Grade 9.	Grade 10.	Total
Primary general schools	132	0	0	132
Secondary general schools	8	44	61	113
Secondary vocational schools	0	42	55	97
Vocational schools	0	32	30	62
Total	140	118	146	404

Number of students to be chosen in each school type

During the sample design we estimated the expectable number of the students in the chosen classes according to average number of students in a class based on the disposable macro statistics of the 2005/2006 school year. We took the "ESPAD 07" requirements into consideration when we defined the sample size. It sets the minimum number of 16-year-old informants necessary in a country at 2,800. According to educational statistics from the previous school year (2005/2006), the percentage of 16-year-old students in the sample frame of Grades 8, 9, 10 is expected to be 31.23% in average with and 31.31% without special vocational schools. The net sample size that corresponds to the ESPAD requirement on

⁴ Central Region without the Capital, Central Transdanubia Region, Western Transdanubia Region, Southern-Transdanubia Region

sample size is 8,704 persons in the grade 8-10 in the country. We had to add the expected rate of sample loss to this. In the previous ESPAD surveys done in 1999 the national sample loss was 3.5% for schools (with substitutions), in 2003 was 4.9% and for students it was 10.2% in 1999 and 18.6 % in 2003. We use the mean of these experience, and we expect 4.2 % refused classes, and in the interviewed classes the expected rate of individual losses is 14.4% The expected total sample loss $4,2+95.8*0.144\approx 18\%$. Adding this to the net element number the nationally necessary gross sample size became 10,270 persons.

During the sampling procedure we selected 404 classes with 10598 students (gross sample) and the sampled population is 8778 students (net sample). The total loss ratio was 17%. In the net sample the ESPAD 07 target population (born in 1991) is 2837 person.

Type of schools	Grade	Gross sample	Total loss ratio %	Net sample size	Number of 16-year-old population in the net sample
Primary general schools	8	2912	15,49	2461	169
Secondary general schools	9	1336	29,94	936	625
Secondary general schools	10	1853	16,14	1554	449
Secondary vocational schools	9	1305	12,72	1139	725
Secondary vocational schools	10	1602	17,67	1319	339
Vocational schools	9	872	14,91	742	414
Vocational schools	10	718	12,67	627	116
Total		10598	17,17	8778	2837

Method of sampling

In our project the sampling strategies was stratified cluster sampling. In selecting the sample we used a random sampling procedure on the stratified list of classes according to representational criteria in which the sampling unit was the class. In the selected class the all students who were present in class on the day of the survey administration was involved. So every member in the sampling frame had equal chances of inclusion.

When the sampling frame was ready, to reduce the sampling error we divided the classes into non-overlapping, homogeneous subgroups (strata). The number of stratum depended on the size of total number of sampled classes. The variables to divide the samples were follows: Region (Budapest, Western Regions, Eastern Regions), Grade (8., 9. 10.), Type of class (Primary general, Secondary general, Secondary vocational, Vocational classes). The maximum (theoretical) number of strata is 36 in the sample. This way 15 of the 36 groups

⁵ Northern Hungary Region, Northern Great Plain, Southern Great Plain

resulted in an empty set (there is no secondary school and vocational school in Grade 8, and in Grade 9 and 10 there is no elementary school). Classes in the sample frame were divided into three sub-samples according to their location (Budapest, Western Regions, Eastern Regions) then these groups were subdivided into 7 layers according to the reduced class type and grade. The classes belonging to one of the total of 21 valid layers were selected into a random sample without replacement according to the sample sizes by strata.

The basic list (database) of sampling came from the Education Information System 2006/2007 (KIR-STAT) and the other relevant information source of population statistics were the Living Standards and Human Resources Statistics Department of Hungarian Central Statistical Office and Demographic Research Institute.

Number and types of classes by strata with and without over-representing Budapest

Strata			Number of classes	
Sub-samples	Strata		Without over-representing Budapest	Over-representing Budapest 10 th grade
Sub-sample 'Budapest' with and without over-representing	Prim. General	Grade 08	4,44	21
	Sec. general	Grade 09	3,31	12
	Sec. general	Grade 10	3,20	22
	Sec. vocational	Grade 09	2,80	9
	Sec. vocational	Grade 10	2,60	20
	Vocational	Grade 09	0,96	4
	Vocational	Grade 10	0,69	6
Sub-sample 'Western Regions'	Prim. General	Grade 08	12,46	59
	Sec. general	Grade 09	4,83	15
	Sec. general	Grade 10	5,48	18
	Sec. vocational	Grade 09	4,68	15
	Sec. vocational	Grade 10	5,04	17
	Vocational	Grade 09	3,47	13
	Vocational	Grade 10	2,64	11
Sub-sample 'Eastern Regions'	Prim. General	Grade 08	12,66	60
	Sec. general	Grade 09	5,65	17
	Sec. general	Grade 10	6,45	21
	Sec. vocational	Grade 09	5,71	18
	Sec. vocational	Grade 10	5,63	18
	Vocational	Grade 09	4,10	15
	Vocational	Grade 10	3,20	13
Total 21 strata			381	404

Representativeness

The proportion of the population by strata (region, grade and type)

Sub-samples	Strata		Population	Sample frame (over-representing Budapest 10th grade)	Sampled population without weighting	Sampled population after weighting
Sub-sample 'Budapest'	Prim. General	Grade 08	4,44	3,92	3,69	4,44
	Sec. general	Grade 09	3,31	3,27	1,80	3,31
	Sec. general	Grade 10	3,20	6,20	5,88	3,20
	Sec. vocational	Grade 09	2,80	2,52	2,59	2,80
	Sec. vocational	Grade 10	2,60	4,96	4,83	2,60
	Vocational	Grade 09	0,96	0,95	0,92	0,96
	Vocational	Grade 10	0,69	1,15	1,07	0,69
Sub-sample 'Western Regions'	Prim. General	Grade 08	12,46	12,27	13,02	12,46
	Sec. general	Grade 09	4,83	4,27	4,22	4,83
	Sec. general	Grade 10	5,48	5,31	5,24	5,48
	Sec. vocational	Grade 09	4,68	4,43	4,08	4,68
	Sec. vocational	Grade 10	5,04	5,03	5,32	5,04
	Vocational	Grade 09	3,47	3,16	3,43	3,47
	Vocational	Grade 10	2,64	2,66	2,85	2,64
Sub-sample 'Eastern Regions'	Prim. General	Grade 08	12,66	11,28	11,32	12,66
	Sec. general	Grade 09	5,65	5,07	4,65	5,65
	Sec. general	Grade 10	6,45	5,97	6,58	6,45
	Sec. vocational	Grade 09	5,71	5,36	6,31	5,71
	Sec. vocational	Grade 10	5,63	5,13	4,88	5,63
	Vocational	Grade 09	4,10	4,12	4,10	4,10
	Vocational	Grade 10	3,20	2,96	3,22	3,20
Total 21 strata			100	100	100	100

The sum of percentages may not total 100 due to rounding

Tables 1 a-g. Sampling frame, sampling, response rates and participating students.

1a). Sampling frame.

School types	Number of schools	Number of classes
Primary general schools	2760	5284
Secondary general schools	612	4092
Secondary vocational schools	610	3467
Vocational schools	431	2343
Totals	4413	15186

1b). Sample size.

School types	Number of schools	Number of classes	Number of students		
			Boys	Girls	All
Primary general schools	128	132	1440	1313	2753
Secondary general schools	102	113	1400	2090	3490
Secondary vocational schools	92	97	1551	1392	2943
Vocational schools	56	62	975	596	1571
Totals	378	404	5366	5391	10757

1c). Participating schools, classes and students.*

School types	Number of schools	Number of classes	Number of students		
			Boys	Girls	All
Primary general schools	131	136			
Secondary general schools	86	90			
Secondary vocational schools	86	92			
Vocational schools	55	62			
Totals	358	380			

3. Weighting

In the editing process we used matrix-weighting method to reduce the variations in response rate between different groups in the sample. The weighting procedure based on the Education Information System 2006/2007 (KIR-STAT) database. We had to use the following weights by strata:

Sub-samples	Strata		Weight 2
Sub-sample 'Budapest'	Prim. General	Grade 08	1.163761722
	Sec. general	Grade 09	1.816123504
	Sec. general	Grade 10	0.558067661
	Sec. vocational	Grade 09	1.040620081
	Sec. vocational	Grade 10	0.512081628
	Vocational	Grade 09	0.934049974
	Vocational	Grade 10	0.585842631
Sub-sample 'Western Regions'	Prim. General	Grade 08	0.926052604
	Sec. general	Grade 09	1.082197247
	Sec. general	Grade 10	0.984730645
	Sec. vocational	Grade 09	1.111049329
	Sec. vocational	Grade 10	0.919267345
	Vocational	Grade 09	0.973985165
	Vocational	Grade 10	0.903748561
Sub-sample 'Eastern Regions'	Prim. General	Grade 08	1.090318603
	Sec. general	Grade 09	1.17197706
	Sec. general	Grade 10	0.931972519
	Sec. vocational	Grade 09	0.86912219
	Sec. vocational	Grade 10	1.110346878
	Vocational	Grade 09	0.980712465
	Vocational	Grade 10	0.965549207