Sensitivity analysis for work module

Weighting effects on work module variables, ESS round 5

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Abstract: We run sensitivity analysis for the WORK module in R5 using ESS draft final weights delivered at month April as a formal deliverable of post-stratification weights for rounds 1-5. We checked the difference for the estimates (for percentage or mean) before weighing (i.e. DWEIGHT only) and after weighing for 32 categorical and for eight ordinal variables (scale 0-10 or 0-6).

The results show that WORK-module variables are much more sensitive to weighting compared to the set of nine scale standard variables which initially served for basic sensitivity analysis. Relative change higher than 5% occurs in 189 (23%) estimates out of 832 (32 variables x 26 countries) of categorical variables and also in six (3%) estimates out of 208 (8 variables x 26 countries) of scale variables. The relative change higher than 10% occurs in 51 estimates of categorical variables and in 1 estimate of scale variables.

Absolute differences are typically below one standard error. In 174 cases out of 1,040 the difference is higher than standard error and in 42 cases it surpasses two standard errors ($t>1.96$). We may add that these estimates overestimate true t-values, because standard errors calculation assumes only SRS sample ignoring design effect (DEFF). However as design effects are moderate in ESS, the t-values might be overestimated only up to around 10%.

The highest average across countries relative differences was observed for unemployment rate, where the average relative difference was 7%, followed the estimate of percentage of people that have an employment contract for limited duration (average relative difference 5.50%), and for the estimate of percentage saying “true” about their health or safety is at risk because of their work (average relative difference 5.9%).

The countries with the highest weighting effect were Slovakia, Ukraine and Portugal, where average relative difference of 32 categorical variables above 6%.

Even larger differences appear in cross-tabulations and related significance levels of test statistics, as well as with correlations, where in many countries, substantial changes (even a relative change of correlation coefficient above 50%) occurred.

All in all, on one hand these changes for WORK module seems to be substantial (at least much larger than for default nine variables), while on the other hand – except few extremes - they seem to show random oscillation. The question, however, it whether we may allow and tolerate random oscillation for this type of corrections.

1. Introduction

As part of our sensitivity analysis we analysed the weighting effects for variables from ESS Work module. The draft weights were at the same time (in parallel) checked also with NC - what was completed later with undefined conclusion data. However, so due to small expected changes we expect further changes in post-stratification weight with substantial impacts only in few countries (with DWEIGHT problem), so the existing analysis is informative for studying the effects of weights.

In first part of the analysis we arbitrary (with common sense purposive selection of important variables) selected 40 variables - 32 categorical and 8 continuous (see Table 2). We then compared estimates before and after weighting. In case of dichotomous variables (i.e. categorical variable with two categories) the calculation of absolute and relative difference between estimates before and after weighting was done for category "yes". In case of variables with more categories we have selected largest central categories (for instance, in variables which measure the agreement, the category "agree"), whereas in variables, where selection of category was not so clear, we chose the category which was more expressive or interesting. In case of continuous variables the absolute and relative difference were computed for the mean estimate.

2. Means and shares

The results in Table 1 below show that considering all 40 variables the average relative difference in the estimate before and after weighting is 3.04%. With 32 categorical variables the average relative difference is 3.43%, whereas in case of 8 continuous variables the average relative difference is 1.43%.

As we can see, between all 832 survey estimates of selected categorical variables (32 variables and 26 countries), 643 estimates have relative difference of 5% or smaller, with 138 estimates between 5% and 10%, whereas 51 estimates have relative difference higher than 10%. In case of 208 survey estimates of continuous variables (8 variables and 26 countries), 202 estimates have relative difference 5% or smaller, 4 estimates have relative difference between 5% and 10%, whereas the difference above 10% appears on 2 estimates.

If we check the absolute difference/change of the estimates that appears with post-stratification weighting, we can find that average absolute difference in categorical variables

is 0.70, and 0.09 in case of continuous variables (0.08 on variables with scale 0-10 and 0.03 in variables with scale 0-6). Majority (654) of estimates from categorical variables have absolute difference that is lower than value 1.0, but with 51 the estimates absolute difference is higher than value 2.0. In case of continuous variables only one estimates (variable with open scale) has absolute difference between the value 1.0 and 2.0, all others (207) have absolute difference that is lower than 1.0.

Table 1: Summary table of relative and absolute difference for all 1040 survey estimates (40 variables and 26 countries)

Relative difference					
Type of variable	diff. ≤ 5%	5% < diff. ≤ 10%	diff. > 10%	Total number of survey estimates	Average absolute relative diff.
Categorical variables (32)	643 (77,3%)	138 (16,6%)	51 (6,1%)	832 (100%)	3,43%
Continuous variables (8)	202 (97,1%)	4 (1,9%)	2 (1,0%)	208 (100%)	1,48%
Total (40)	845 (81,3%)	142 (13,7%)	53 (5,1%)	1040 (100%)	3,04%
Absolute difference					
Type of variable	diff. ≤ 1	1 < diff. ≤ 2	diff. > 2	Total number of survey estimates	Average absolute diff.
Categorical variables (32)	654 (78,6%)	121 (14,5%)	57 (6,9%)	832 (100%)	0,70
Continuous variables (8)	207(99,5%)	1 (0,5%)	0 (0,0%)	208 (100%)	0,09
Total (40)	861 (82,8%)	122 (11,7%)	57 (5,5%)	1040 (100%)	

On average the variables from work module are more sensitive than 9 standard variables which were included in initial analysis of weighting effect. As described above the average relative difference forth work module variables is 3.04%, whereas in 9 standard variables the average relative difference was 0.84%. Even if we compare only continuous variables the average relative difference is much larger in work module variables (1.48% vs. 0.84%).

Among categorical variables we found especially sensitive estimate when we consider relative difference is the estimate of *unemployment rate*, where the average relative difference (for all countries) appears to be 6.92%. The other largest changes with weighting appeared for the estimate of *percentage of people that have an employment contract for limited duration* (average relative difference is 5.50%), *percentage of people who say that it is very true their health or safety is at risk because of their work* (average relative difference 5.91%), and for the estimate of *percentage of people who have done at least six-month paid work in another country* (average relative difference 5.14%)

Considering average absolute difference the largest differences arise for the estimate of *percentage of people who were unemployed and work seeking within last 5 years* (average absolute difference is 1.78), estimate of *percentage of people that have an employment contract for unlimited duration* (average absolute difference 1.31), and the estimate *for percentage of people who say that it is very true their current job requires that they keep learning new things* (average absolute difference 1.19).

The largest absolute difference with continuous variables appears for estimate of mean for *total hours normally worked per week in main job, where overtime is included* (average absolute difference 0.31), whereas the largest average relative difference appears on the mean estimate for *size of worker's influence to decide how his daily work is organized*, where the average relative difference is 2.50% (see Table 2).

Countries where the largest average relative and absolute differences appear are Slovakia Ukraine, Portugal and Croatia. In those countries several problems during weighting procedure were discovered (i.e. weight problem, mismatch in coding)[1], therefore it is not surprising that in these countries the largest average relative and absolute differences arise. If we exclude these countries from a comparison, the countries with the largest average and relative differences are Cyprus (average relative difference 4.37% and average absolute difference 0.81), Sweden (3.75% and 0.88), Denmark (3.62% and 0.67), Israel (3.57% and 0.74) Greece (3.52% and 0.68) and Netherlands (3.51% and 0.76) considering 32 categorical variables, whereas in case of continuous variables the largest relative or absolute differences appear in Denmark, Sweden, Belgium, Bulgaria and Ireland (see Table 3).

All data about relative and absolute difference for specific country and specific variable are available on http://mi.ris.org/uploadi/editor/DnD1372871316Weightingeffectworkmodulevariables_output.xls. In the first table with relative differences, for example a value -7.24 for Bulgaria means that unweighted estimate is for 7.24% smaller than weighted (value of the estimate increases with weighting from 13.9% to 15.0%), and as in this case the relative difference is between 5%-10% the value is coloured in yellow, while those above 10% are coloured orange. In the second table, where absolute differences are shown, for example a value 1.16 for Belgium means that unweighted estimate is for 1.16 larger than weighted (value of the estimate decreases with weighting from 81.5% to 80.4%. In case of absolute differences the values which are between 1-2 are coloured in yellow, while those above 2 are coloured orange.

[1] Currently the ESS team is in process of problem-solving.

Table 2: Average relative and absolute difference for 32 categorical and 8 continuous variables

Variables	Average relative difference (%)	Average absolute difference
Unemployed and actively looking for job	6,92	0,39
Employment relation: Self-employed	3,64	0,38
Employment contract for unlimited duration	1,88	1,31
Employment contract for limited duration	5,50	0,87
Paid work in another country, period more than 6 months last 10 years	5,14	0,33
Ever unemployed and seeking work for a period of more than three months	3,13	0,83
Any period of unemployment and work seeking lasted 12 months or more	2,62	1,21
Any period of unemployment and work seeking within last 5 years	3,45	1,78
Feeling about household's income nowadays: finding it difficult on present income	3,13	0,62
In serious financial difficulties it would be quite difficult to borrow money to make ends meet	1,59	0,41
Several times a month my work involve working at evenings/nights	3,34	0,54
Several times a month my work involve having to work overtime at short notice	2,95	0,44
Several times a month my work involve working at weekends	2,79	0,71
Very true that there is a lot of variety in my current job	3,25	0,93
Very true that my current job requires that I keep learning new things	4,76	1,19
Very true that my wage or salary depends on the amount of effort I put into my work	3,73	0,44
Very true that I can get support and help from my co-workers when needed	2,35	0,71
Very true that my health or safety is at risk because of my work	5,91	0,60
Very true that I can decide the time I start and finish work	4,53	0,41
Very true that my current job is secure	3,58	0,71
I agree that my job requires that I work very hard	1,54	0,71
I agree that I never seem to have enough time to get everything done in my job.	2,19	0,60
I agree that my opportunities for advancement are good	3,09	0,75
I agree that considering all my efforts and achievements in my job, I feel I get paid appropriately	1,70	0,55
Often keep worrying about work problems when not working	4,80	0,90
Often too tired after work to enjoy the things I would like do at home	2,63	0,60
Often find that my job prevents me from giving the time I want to my partner or family	2,45	0,38
Often find that my partner or family gets fed up with the pressure of my job	4,37	0,32
I had to do less interesting work, last 3 years	3,11	0,85
I had to take a reduction in pay, last 3 years	3,36	0,79
I had to work shorter hours, last 3 years	3,63	0,58
I had less security in job, last 3 years	2,66	0,66
Allowed to decide how daily work is organised (0 - No influence; 10 - Complete control)	2,50	0,13
Allowed to choose/change pace of work (0 - No influence; 10 - Complete control)	2,27	0,11
Total hours normally worked per week in main job overtime included	0,72	0,31
To what extent had to manage on lower household income last 3 years (0- Not at all; 6 - A great deal)	1,41	0,03
To what extent had to draw on savings/debt to cover ordinary living expenses last 3 years (0 - Not at all; 6 - A great deal)	1,64	0,03
To what extent had to cut back on holidays or household eqp. last 3 years (0-Not at all; 6-A greatdeal)	1,88	0,04
How difficult/easy to get similar or better job if had to leave employer (0 - Extremely difficult; 10 - Extremely easy)	1,07	0,04
How satisfied are you in your main job (0 - Extremely dissatisfied; 10 - Extremely satisfied)	0,36	0,03

Table 3: Relative and absolute difference for each country

Country	Average Relative difference (%)		Average absolute difference	
	Categorical variables (32)	Continuous variables (8)	Categorical variables (32)	Continuous variables (8)
Belgium	3,09	2,58	0,67	0,10
Bulgaria	3,21	2,12	0,67	0,11
Switzerland	1,93	1,18	0,34	0,09
Cyprus	4,37	1,76	0,81	0,10
Czech Republic	2,44	0,26	0,42	0,01
Germany	2,24	1,41	0,46	0,09
Denmark	3,62	2,43	0,67	0,18
Estonia	2,50	1,16	0,56	0,07
Spain	1,74	0,70	0,32	0,03
Finland	2,56	1,09	0,54	0,06
France	2,80	1,05	0,61	0,07
UK	2,77	0,90	0,64	0,07
Greece	3,52	1,03	0,68	0,09
Croatia	5,04	1,11	1,01	0,04
Hungary	2,21	1,08	0,40	0,05
Ireland	1,80	0,96	0,31	0,23
Israel	3,57	1,47	0,74	0,07
Netherlands	3,51	0,82	0,76	0,05
Norway	2,70	0,81	0,53	0,06
Poland	1,57	1,02	0,37	0,05
Portugal	6,02	1,85	1,10	0,07
Russia	3,29	1,74	0,65	0,12
Sweden	3,75	2,25	0,88	0,09
Slovenia	2,58	0,83	0,43	0,04
Slovakia	8,70	2,54	1,85	0,13
Ukraine	7,64	4,37	1,85	0,27

3. Correlations

We have also tested to what extent the population weighting effects the correlation and their estimates. We have checked what differences appear in Pearson correlation coefficient with pairs of six variables for six specific countries (Estonia, Germany, Netherlands, Czech Republic, Greece and Cyprus).

Results of comparison show relative differences which, in small cases surpass 60%. But in that case values of relative difference could be somewhat misleading because from aspect of absolute difference and especially from contextual, interpretative perspective differences are not so drastic that it looks on first sight. However, the largest relative difference in Pearson correlation coefficient arises in case of Greece, where coefficient increases from the value 0.018 to 0.048 (relative difference is 62.5%). Considering the absolute difference the largest difference appears in case of Cyprus, where correlation coefficient increases from 0.032 to 0.082.

For details about the effect of weighting on a correlation coefficient for six specific countries, see http://mi.ris.org/uploadi/editor/DnD1372871316Weightingeffectworkmodulevariables_output.xls, where first table of correlations shows Pearson correlations coefficients before and after weighting (for example, in case of Germany the correlation coefficients values -0.251 and -0.270 between variables "How satisfied with life as a hole" and "Longest period in months continuously unemployed and seeking work" means that correlation coefficient with weighting changed from the value -0.251 to -0.270), and next two tables presents relative and absolute change for those coefficients (in case of Germany the values -7.04 and 0.019 for the same pair of variables means that Pearson coefficient on unweighted data is for 7.04% or 0.019 smaller than on weighted data, which is also presented in Tables 5 and 6 below).

Table 4: Pearson correlations when data unweighted (dw) and weighted (w4) by post-stratification weights (Greece, Round 5)

		Allowed to decide how daily work is organised	How satisfied are you in your main job	Longest period in months continuously unemployed and seeking work, last 3 years	To what extent had to manage on lower household income last 3 years	How satisfied with life as a whole	How satisfied with present state of economy in country
Allowed to decide how daily work is organised (0 - No influence; 10 - Complete control)	dw	1,000	,018	-,215**	-,076**	,051*	-,022
	w4	1,000	,048	-,204**	-,077**	,055*	-,044*
How satisfied are you in your main job (0 - Extremely dissatisfied, 10 - Extremely satisfied)	dw	,018	1,000	-,102**	-,191**	,341**	,118**
	w4	,048	1,000	-,120**	-,173**	,370**	,117**
Longest period in months continuously unemployed and seeking work, last 3 years	dw	-,215**	-,102**	1,000	,142**	-,096**	-,015
	w4	-,204**	-,120**	1,000	,155**	-,111**	-,012
To what extent had to manage on lower household income last 3 years (0 - Not at all; 6 - A great deal)	dw	-,076**	-,191**	,142**	1,000	-,120**	-,094**
	w4	-,077**	-,173**	,155**	1,000	-,111**	-,093**
How satisfied with life as a whole (0 - Extremely dissatisfied; 10 - Extremely satisfied)	dw	,051*	,341**	-,096**	-,120**	1,000	,205**
	w4	,055*	,370**	-,111**	-,111**	1,000	,209**
How satisfied with present state of economy in country (0 - Extremely dissatisfied; 10 - Extremely satisfied)	dw	-,022	,118**	-,015	-,094**	,205**	1,000
	w4	-,044*	,117**	-,012	-,093**	,209**	1,000

Table 5: Relative difference of the Pearson correlation coefficient

		Allowed to decide how daily work is organised	How satisfied are you in your main job	Longest period in months continuously unemployed and seeking work, last 3 years	To what extent had to manage on lower household income last 3 years	How satisfied with life as a whole	How satisfied with present state of economy in country
Allowed to decide how daily work is organised (0 - No influence; 10 - Complete control)	DE	0	0,46	-3,55	-6,14	0,76	-1,94
	EE	0	-2,27	-6,31	-23,29	-5,81	-3,13
	GR	0	-62,46	5,39	-1,30	-7,27	-49,46
	NL	0	-18,63	-1,04	10,00	15,04	-0,99
	CY	0	-5,56	-11,48	-22,31	-49,67	-46,05
	CZ	0	-1,05	2,26	-5,68	-2,15	9,80
How satisfied are you in your main job (0 - Extremely dissatisfied, 10 - Extremely satisfied)	DE	0,46	0	7,83	-0,52	3,27	-2,27
	EE	-2,27	0	-10,16	0,66	-0,27	-3,63
	GR	-62,46	0	-15,00	10,40	-7,84	0,85
	NL	-18,63	0	-12,27	-17,86	0,00	-1,24
	CY	-5,56	0	-58,85	0,37	4,70	-60,59
	CZ	-1,05	0	19,54	3,82	3,25	2,04
Longest period in months continuously unemployed and seeking work, last 3 years	DE	-3,55	7,83	0	0,74	-7,04	-4,48
	EE	-6,31	-10,16	0	0,78	0,47	-1,60
	GR	5,39	-15,00	0	-8,39	-13,51	26,36
	NL	-1,04	-12,27	0	-1,60	0,66	23,76
	CY	-11,48	-58,85	0	-11,05	-28,98	-3,27
	CZ	2,26	19,54	0	4,92	-2,80	13,35
To what extent had to manage on lower household income last 3 years (0 - Not at all; 6 - A great deal)	DE	-6,14	-0,52	0,74	0	-1,54	-1,50
	EE	-23,29	0,66	0,78	0	0,99	3,47
	GR	-1,30	10,40	-8,39	0	8,11	1,08
	NL	10,00	-17,86	-1,60	0	6,93	4,59
	CY	-22,31	0,37	-11,05	0	4,46	-20,22
	CZ	-5,68	3,82	4,92	0	-0,66	3,17
How satisfied with life as a whole (0 - Extremely dissatisfied; 10 - Extremely satisfied)	DE	0,76	3,27	-7,04	-1,54	0	-1,52
	EE	-5,81	-0,27	0,47	0,99	0	-0,79
	GR	-7,27	-7,84	-13,51	8,11	0	-1,91
	NL	15,04	0,00	0,66	6,93	0	5,32
	CY	-49,67	4,70	-28,98	4,46	0	7,98
	CZ	-2,15	3,25	-2,80	-0,66	0	-0,81
How satisfied with present state of economy in country (0 - Extremely dissatisfied; 10 - Extremely satisfied)	DE	-1,94	-2,27	-4,48	-1,50	-1,52	0
	EE	-3,13	-3,63	-1,60	3,47	-0,79	0
	GR	-49,46	0,85	26,36	1,08	-1,91	0
	NL	-0,99	-1,24	23,76	4,59	5,32	0
	CY	-46,05	-60,59	-3,27	-20,22	7,98	0
	CZ	9,80	2,04	13,35	3,17	-0,81	0

Table 6: Absolute difference of the Pearson correlation coefficient

		Allowed to decide how daily work is organised	How satisfied are you in your main job	Longest period in months continuously unemployed and seeking work, last 3 years	To what extent had to manage on lower household income last 3 years	How satisfied with life as a whole	How satisfied with present state of economy in country
Allowed to decide how daily work is organised (0 - No influence; 10 - Complete control)	DE	0	0,001	0,005	0,007	0,001	-0,003
	EE	0	-0,005	0,007	0,017	-0,010	-0,004
	GR	0	-0,030	-0,011	0,001	-0,004	0,022
	NL	0	-0,030	0,001	-0,010	0,017	-0,001
	CY	0	-0,010	0,014	0,029	-0,026	-0,044
	CZ	0	-0,002	-0,003	0,010	-0,004	0,010
How satisfied are you in your main job (0 - Extremely dissatisfied, 10 - Extremely satisfied)	DE	0,001	0	-0,009	0,001	0,011	-0,005
	EE	-0,005	0	0,013	-0,001	-0,001	-0,009
	GR	-0,030	0	0,018	-0,018	-0,029	0,001
	NL	-0,030	0	0,006	0,015	0,000	-0,002
	CY	-0,010	0	0,027	-0,001	0,014	-0,050
	CZ	-0,002	0	-0,017	-0,010	0,010	0,004
Longest period in months continuously unemployed and seeking work, last 3 years	DE	0,005	-0,009	0	0,002	0,019	0,009
	EE	0,007	0,013	0	0,002	-0,001	0,003
	GR	-0,011	0,018	0	-0,013	0,015	-0,003
	NL	0,001	0,006	0	-0,004	-0,001	-0,024
	CY	0,014	0,027	0	-0,008	-0,008	0,008
	CZ	-0,003	-0,017	0	0,009	0,004	-0,006
To what extent had to manage on lower household income last 3 years (0 - Not at all; 6 - A great deal)	DE	0,007	0,001	0,002	0	0,005	0,004
	EE	0,017	-0,001	0,002	0	-0,003	-0,007
	GR	0,001	-0,018	-0,013	0	-0,009	-0,001
	NL	-0,010	0,015	-0,004	0	-0,016	-0,010
	CY	0,029	-0,001	-0,008	0	-0,009	0,036
	CZ	0,010	-0,010	0,009	0	0,002	-0,006
How satisfied with life as a whole (0 - Extremely dissatisfied; 10 - Extremely satisfied)	DE	0,001	0,011	0,019	0,005	0	-0,006
	EE	-0,010	-0,001	-0,001	-0,003	0	-0,004
	GR	-0,004	-0,029	0,015	-0,009	0	-0,004
	NL	0,017	0,000	-0,001	-0,016	0	0,014
	CY	-0,026	0,014	-0,008	-0,009	0	0,015
	CZ	-0,004	0,010	0,004	0,002	0	-0,003
How satisfied with present state of economy in country (0 - Extremely dissatisfied; 10 - Extremely satisfied)	DE	-0,003	-0,005	0,009	0,004	-0,006	0
	EE	-0,004	-0,009	0,003	-0,007	-0,004	0
	GR	0,022	0,001	-0,003	-0,001	-0,004	0
	NL	-0,001	-0,002	-0,024	-0,010	0,014	0
	CY	-0,044	-0,050	0,008	0,036	0,015	0
	CZ	0,010	0,004	-0,006	-0,006	-0,003	0

4. Cross tabulations

In the further analysis we have also compare the structures of several two-dimensional contingency tables when data are not weighted and when only population weights are applied. Besides that we have also checked for potential differences in hi-square test of independence. The analysis was performed for Estonia, Germany, Netherlands, Greece, Cyprus and Czech Republic.

Results in Table 7 below show changes in the structure of 5 two-dimensional contingency tables and also differences in values for statistical tests. We can find out that differences that appear with weighting are substantial. Considering all 120 internal cells (margins excluded) of 5 two-dimensional tables, 28 cells (which is 23% of all cells) have been changed for 1.0% point or more (i.e. absolute difference). The largest difference has appeared in case of Netherland, where estimate for *percentage of males who were unemployed for twelve months or more*, decreased from 34.8% to 31.2% (absolute difference 3.53, relative difference 11.29%).

In case of relative difference, 16 internal cells (13.3% of all cells) have been changed for 5% or more. The largest difference has appeared in case of Cyprus, where estimate for *percentage of females who are unemployed and actively looking for job* increased from 3.8% to 4.6% (relative difference 16.46%).

Differences in Chi square significance (p-value) for unweighting and weighting estimates (we used default SPSS procedures) look more substantial. In 10 cases out of 30 the p-values have been changed for 0.20 and more (absolute difference). The largest absolute differences arise in case of Netherlands, between variables *gender* and *any period of unemployment and work seeking lasted 12 months or more*, where p-value decreases from 0.78 to 0.35, and in case of Greece, where p-value increases from 0.21 to 0.59 (between variable *gender* and variable, which measure whether a person *had to take a reduction in pay, in last three years*). Considering relative difference the largest difference, that even surpass 1400%, appears in case of Greece, between variables *gender* and *unemployment status*, where p-value changes from 0.25 to 0.016 (relative difference 1487,5%, absolute difference 0.24).

For more details about changing the survey estimates in two-dimensional tables through population weighting, where absolute and relative differences are presented, see http://mi.ris.org/uploadi/editor/DnD1372871316Weightingeffectworkmodulevariables_output.xls.

Table 7: Structure of two-dimensional tables before (dw) and after post-stratification weighting (w4)

			Any period of unemployment and work seeking lasted 12 months or more			Unemployed and actively looking for job			Had to do less interesting work, last 3 years			Had to take a reduction in pay, last 3 years			Had less security in job, last 3 years		
			Yes	No	Total	No	Yes	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
DE	Male	dw	44,5%	55,5%	100,0%	96,3%	3,7%	100,0%	33,2%	66,8%	100,0%	22,7%	77,3%	100,0%	19,2%	80,8%	100,0%
		w4	45,0%	55,0%	100,0%	96,0%	4,0%	100,0%	32,4%	67,6%	100,0%	22,4%	77,6%	100,0%	19,6%	80,4%	100,0%
	Female	dw	58,7%	41,3%	100,0%	96,8%	3,2%	100,0%	27,6%	72,4%	100,0%	19,8%	80,2%	100,0%	14,8%	85,2%	100,0%
		w4	60,2%	39,8%	100,0%	96,6%	3,4%	100,0%	27,4%	72,6%	100,0%	19,4%	80,6%	100,0%	14,2%	85,8%	100,0%
	Total	dw	51,4%	48,6%	100,0%	96,5%	3,5%	100,0%	30,8%	69,2%	100,0%	21,5%	78,5%	100,0%	17,3%	82,7%	100,0%
		w4	52,8%	47,2%	100,0%	96,4%	3,6%	100,0%	30,2%	69,8%	100,0%	21,1%	78,9%	100,0%	17,2%	82,8%	100,0%
	Pearson Chi-Square	dw	14,509 (sig.= ,000)			,681 (sig. = ,409)			5,465 (sig. = ,019)			1,930 (sig. = ,165)			5,009 (sig. = ,025)		
		w4	16,866 (sig. = ,000)			,766 (sig. = ,381)			4,306 (sig. = ,038)			1,938 (sig. = ,164)			7,453 (sig. = ,006)		
EE	Male	dw	46,0%	54,0%	100,0%	93,2%	6,8%	100,0%	37,7%	62,3%	100,0%	55,7%	44,3%	100,0%	51,3%	48,7%	100,0%
		w4	46,1%	53,9%	100,0%	92,8%	7,2%	100,0%	38,6%	61,4%	100,0%	55,3%	44,7%	100,0%	51,7%	48,3%	100,0%
	Female	dw	51,6%	48,4%	100,0%	95,1%	4,9%	100,0%	25,6%	74,4%	100,0%	55,7%	44,3%	100,0%	50,6%	49,4%	100,0%
		w4	51,0%	49,0%	100,0%	94,9%	5,1%	100,0%	26,5%	73,5%	100,0%	55,5%	44,5%	100,0%	50,3%	49,7%	100,0%
	Total	dw	49,2%	50,8%	100,0%	94,3%	5,7%	100,0%	31,1%	68,9%	100,0%	55,7%	44,3%	100,0%	50,9%	49,1%	100,0%
		w4	48,6%	51,4%	100,0%	93,9%	6,1%	100,0%	32,5%	67,5%	100,0%	55,4%	44,6%	100,0%	51,0%	49,0%	100,0%
	Pearson Chi-Square	dw	1,700 (sig.= ,192)			2,716 (sig. = ,099)			14,200 (sig. = ,000)			,000 (sig. = ,994)			,037 (sig. = ,848)		
		w4	1,318 (sig. = ,251)			3,604 (sig. = ,058)			14,915 (sig. = ,000)			,002 (sig. = ,968)			,175 (sig. = ,676)		
GR	Male	dw	50,5%	49,5%	100,0%	89,9%	10,1%	100,0%	14,4%	85,6%	100,0%	33,1%	66,9%	100,0%	28,8%	71,2%	100,0%
		w4	50,1%	49,9%	100,0%	89,6%	10,4%	100,0%	14,9%	85,1%	100,0%	34,8%	65,2%	100,0%	29,7%	70,3%	100,0%
	Female	dw	67,5%	32,5%	100,0%	91,2%	8,8%	100,0%	15,5%	84,5%	100,0%	36,9%	63,1%	100,0%	24,1%	75,9%	100,0%
		w4	68,9%	31,1%	100,0%	92,2%	7,8%	100,0%	16,1%	83,9%	100,0%	36,5%	63,5%	100,0%	23,9%	76,1%	100,0%
	Total	dw	60,1%	39,9%	100,0%	90,6%	9,4%	100,0%	14,9%	85,1%	100,0%	34,9%	65,1%	100,0%	26,6%	73,4%	100,0%
		w4	59,5%	40,5%	100,0%	90,9%	9,1%	100,0%	15,3%	84,7%	100,0%	35,5%	64,5%	100,0%	27,4%	72,6%	100,0%
	Pearson Chi-Square	dw	23,099 (sig. = ,000)			1,301 (sig. = ,254)			,251 (sig. = ,616)			1,576 (sig. = ,209)			2,874 (sig. = ,090)		
		w4	27,966 (sig. = ,000)			5,843 (sig. = ,016)			,270 (sig. = ,604)			,298 (sig. = ,585)			3,908 (sig. = ,048)		

NL	Male	dw	34,8%	65,2%	100,0%	97,5%	2,5%	100,0%	27,9%	72,1%	100,0%	16,0%	84,0%	100,0%	29,2%	70,8%	100,0%
		w4	31,2%	68,8%	100,0%	97,5%	2,5%	100,0%	29,5%	70,5%	100,0%	15,9%	84,1%	100,0%	30,4%	69,6%	100,0%
	Female	dw	36,3%	63,7%	100,0%	97,2%	2,8%	100,0%	23,2%	76,8%	100,0%	13,6%	86,4%	100,0%	26,4%	73,6%	100,0%
		w4	36,1%	63,9%	100,0%	97,0%	3,0%	100,0%	24,3%	75,7%	100,0%	11,5%	88,5%	100,0%	25,4%	74,6%	100,0%
	Total	dw	35,6%	64,4%	100,0%	97,3%	2,7%	100,0%	25,6%	74,4%	100,0%	14,8%	85,2%	100,0%	27,8%	72,2%	100,0%
		w4	33,6%	66,4%	100,0%	97,3%	2,7%	100,0%	27,2%	72,8%	100,0%	13,9%	86,1%	100,0%	28,2%	71,8%	100,0%
	Pearson Chi-Square	dw	,081 (sig. = ,776)			,087 (sig. = ,769)			2,828 (sig. = ,093)			1,079 (sig. = ,299)			,938 (sig. = ,333)		
		w4	,864 (sig. = ,353)			,410 (sig. = ,522)			3,388 (sig. = ,066)			3,893 (sig. = ,048)			2,969 (sig. = ,085)		
CY	Male	dw	46,3%	53,7%	100,0%	93,1%	6,9%	100,0%	11,9%	88,1%	100,0%	16,0%	84,0%	100,0%	19,5%	80,5%	100,0%
		w4	45,1%	54,9%	100,0%	93,2%	6,8%	100,0%	11,7%	88,3%	100,0%	14,7%	85,3%	100,0%	18,5%	81,5%	100,0%
	Female	dw	44,1%	55,9%	100,0%	96,2%	3,8%	100,0%	15,1%	84,9%	100,0%	14,7%	85,3%	100,0%	19,7%	80,3%	100,0%
		w4	45,0%	55,0%	100,0%	95,4%	4,6%	100,0%	16,5%	83,5%	100,0%	15,9%	84,1%	100,0%	20,2%	79,8%	100,0%
	Total	dw	45,1%	54,9%	100,0%	94,8%	5,2%	100,0%	13,5%	86,5%	100,0%	15,4%	84,6%	100,0%	19,6%	80,4%	100,0%
		w4	45,0%	55,0%	100,0%	94,3%	5,7%	100,0%	13,9%	86,1%	100,0%	15,3%	84,7%	100,0%	19,3%	80,7%	100,0%
	Pearson Chi-Square	dw	,078 (sig. = ,781)			4,953 (sig. = ,026)			1,164 (sig. = ,281)			,180 (sig. = ,672)			,003 (sig. = ,958)		
		w4	,000 (sig. = ,991			2,487 (sig. = ,115)			2,741 (sig. = ,098)			,149 (sig. = ,700)			,255 (sig. = ,614)		
CZ	Male	dw	31,6%	68,4%	100,0%	95,0%	5,0%	100,0%	24,1%	75,9%	100,0%	29,9%	70,1%	100,0%	34,3%	65,7%	100,0%
		w4	31,7%	68,3%	100,0%	95,1%	4,9%	100,0%	23,6%	76,4%	100,0%	28,4%	71,6%	100,0%	33,7%	66,3%	100,0%
	Female	dw	39,8%	60,2%	100,0%	95,1%	4,9%	100,0%	20,4%	79,6%	100,0%	27,6%	72,4%	100,0%	31,1%	68,9%	100,0%
		w4	40,2%	59,8%	100,0%	95,5%	4,5%	100,0%	20,5%	79,5%	100,0%	27,5%	72,5%	100,0%	30,8%	69,2%	100,0%
	Total	dw	36,0%	64,0%	100,0%	95,0%	5,0%	100,0%	22,5%	77,5%	100,0%	28,9%	71,1%	100,0%	32,9%	67,1%	100,0%
		w4	36,3%	63,7%	100,0%	95,3%	4,7%	100,0%	22,2%	77,8%	100,0%	28,0%	72,0%	100,0%	32,4%	67,6%	100,0%
	Pearson Chi-Square	dw	3,460 (sig. = ,063)			,015 (sig. = ,901)			2,453 (sig. = ,117)			,830 (sig. = ,362)			1,466 (sig. = ,226)		
		w4	3,669 (sig. = ,055)			,211 (sig. = ,646)			1,608 (sig. = ,205)			,118 (sig. = ,732)			1,161 (sig. = ,281)		

Table 8: Relative and absolute differences of p-values before (dw) and after post-stratification weighting (w4) on different combinations of 5 dichotomous variables by gender variable

		Any period of unemployment and work seeking lasted 12 months or more	Unemployed and actively looking for job	Had to do less interesting work, last 3 years	Had to take a reduction in pay, last 3 years	Had less security in job, last 3 years
DE	dw	14,509 (sig.= ,000)	,681 (sig. = ,409)	5,465 (sig. = ,019)	1,930 (sig. = ,165)	5,009 (sig. = ,025)
	w4	16,866 (sig. = ,000)	,766 (sig. = ,381)	4,306 (sig. = ,038)	1,938 (sig. = ,164)	7,453 (sig. = ,006)
	rel. diff. (%)	0	7,35	-50,00	,61	316,67
	abs. diff.	0	0,028	-0,019	0,001	0,019
EE	dw	1,700 (sig.= ,192)	2,716 (sig. = ,099)	14,200 (sig. = ,000)	,000 (sig. = ,994)	,037 (sig. = ,848)
	w4	1,318 (sig. = ,251)	3,604 (sig. = ,058)	14,915 (sig. = ,000)	,002 (sig. = ,968)	,175 (sig. = ,676)
	rel. diff. (%)	-23,51	70,69	0	2,69	25,44
	abs. diff.	-0,059	0,041	0	0,026	0,172
GR	dw	23,099 (sig. = ,000)	1,301 (sig. = ,254)	,251 (sig. = ,616)	1,576 (sig. = ,209)	2,874 (sig. = ,090)
	w4	27,966 (sig. = ,000)	5,843 (sig. = ,016)	,270 (sig. = ,604)	,298 (sig. = ,585)	3,908 (sig. = ,048)
	rel. diff. (%)	0	1487,50	1,99	-64,27	87,50
	abs. diff.	0	0,238	0,012	-0,376	0,042
NL	dw	,081 (sig. = ,776)	,087 (sig. = ,769)	2,828 (sig. = ,093)	1,079 (sig. = ,299)	,938 (sig. = ,333)
	w4	,864 (sig. = ,353)	,410 (sig. = ,522)	3,388 (sig. = ,066)	3,893 (sig. = ,048)	2,969 (sig. = ,085)
	rel. diff. (%)	119,83	47,32	40,91	522,92	291,76
	abs. diff.	0,423	0,247	0,027	0,251	0,248
CY	dw	,078 (sig. = ,781)	4,953 (sig. = ,026)	1,164 (sig. = ,281)	,180 (sig. = ,672)	,003 (sig. = ,958)
	w4	,000 (sig. = ,991	2,487 (sig. = ,115)	2,741 (sig. = ,098)	,149 (sig. = ,700)	,255 (sig. = ,614)
	rel. diff. (%)	-21,19	-77,39	186,73	-4,00	56,03
	abs. diff.	-0,210	-0,089	0,183	-0,028	0,344
CZ	dw	3,460 (sig. = ,063)	,015 (sig. = ,901)	2,453 (sig. = ,117)	,830 (sig. = ,362)	1,466 (sig. = ,226)
	w4	3,669 (sig. = ,055)	,211 (sig. = ,646)	1,608 (sig. = ,205)	,118 (sig. = ,732)	1,161 (sig. = ,281)
	rel. diff. (%)	14,55	39,47	-42,93	-50,55	-19,57
	abs. diff.	0,008	0,255	-0,088	-0,370	-0,055

Links:

- Details on means and shares, July 2013 http://mi.ris.org/uploadi/editor/DnD1372871316Weightingeffectworkmodulevariables_output.xls.
- Draft report on weighting 2013, July 2013, http://mi.ris.org/uploadi/editor/DnD1373475752Weighting2013report.docx