DATA QUALITY IN TWO SURVEY MODES: MAWI AND CAWI

СОВРЕМЕННАЯ СОЦИОЛОГИЯ — СОВРЕМЕННОЙ РОССИИ
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CAWI and MAWI

ü CAWI – Computer-Assisted Web Interview

(Web interview conducted via computer or laptop)

ü   MAWI – Mobile-Assisted Web Interview

(Web interview conducted via cell phones)

Why MAWI?

ü In 2011 there were almost twice more mobile Web users who accessed Internet from a mobile device (tablet computer or smartphone) rather than from a computer.

ü Mobile phone is considered to become the prevailing platform for Web access in the next few years.

Advantages of MAWI

ü Opportunity of drawing random sampling using cell phone numbers.

ü Reducing nonresponse rate in Web surveys as respondents have an opportunity to participate in the survey at any convenient time for them.

Main Concerns in MAWI

üCoverage error

üMeasurement error (with the limited processing power, support for browser plug-ins, information input opportunities, small screen size, and lack of mouse and keyboard cell phone may have a negative effect on data quality in Web surveys)
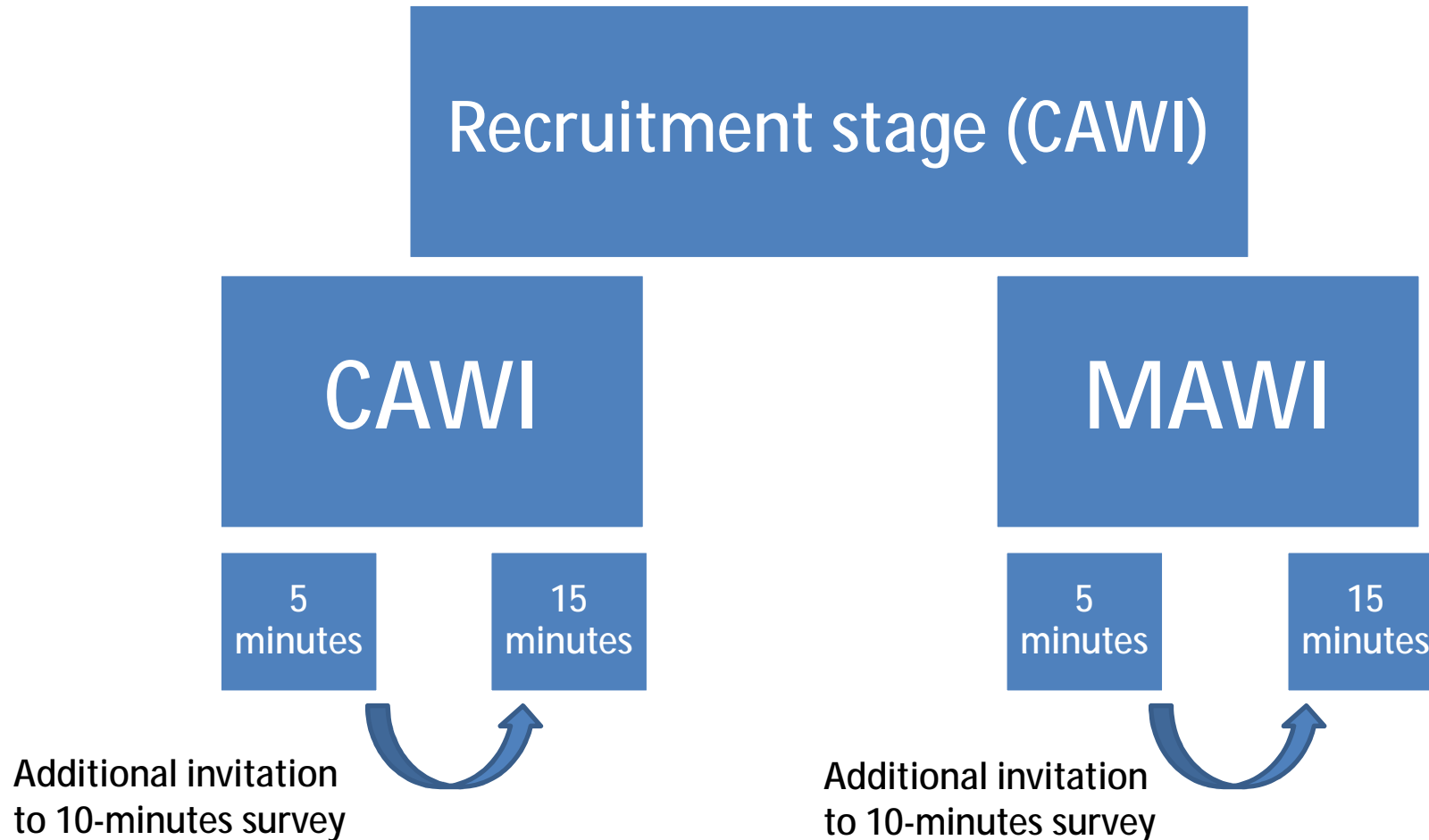
Experiment

Two-factor experiment, with two levels of each factor

ü*Mode of data collection*: CAWI and MAWI.

ü*Length of the questionnaire:* 5 minutes, 15 minutes

Additional survey in "short" questionnaire

Experimental Design

Recruitment stage (CAWI)

CAWI

MAWI

| 5 minutes | 15 minutes |

| 5 minutes | 15 minutes |

Additional invitation
to 10-minutes survey

Additional invitation
to 10-minutes survey

Object: cell phone owners aged at least 18 y.o. who used mobile
Internet in their phones for the last 30 days

Fieldwork Time and Procedure

ü*Fieldwork time*: November 24 to December 8, 2011, by *Online Market Intelligence (OMI)*.

ü*Geography*: Russia

ü*Recruitment stage*: Random invitations among the participants of OMI online access-panel according to the gender and age profile of the mobile Web population in Russia in 2011 (provided by FOM).

ü*Main Survey*: MAWI respondents received invitation by SMS on their cell phones, CAWI respondents received invitation to their e-mails.

Data Quality. Indicators

1. Response rates.

2. Response tendencies (non-differentiation, acquiescence, extreme response style, non-substantive responses), response order effects.

3. Social desirability.

4. Length of open-ended questions.

Hypotheses

1. Response rates.

We expect to get lower response rate in MAWI compared to CAWI, as less number of the panelists in volunteer access-panel has cell phone with Internet access and as MAWI is supposed to impose more cognitive burden on the respondent.

In addition, participation in MAWI is higher correlated with the age and prior experience with mobile Web in comparison to CAWI.

Hypotheses

2. Response tendencies (non-differentiation, acquiescence, extreme response style, non-substantive responses), response order effects.

We expect that overtaxing the respondent's ability to read and fill in the questionnaire on cell phone results in more frequent usage of the short cuts compared to CAWI in both lengths of the questionnaire (5 and 15 minutes).

Hypotheses

3. Social desirability.

We argue that CAWI and MAWI, both self-administered and conducted through Web, do not significantly differ in degree of privacy offered, thus we expect no differences in the respondent's candor and data accuracy in sensitive questions between MAWI and CAWI.

4. Length of open-ended questions.

We measure quality of the responses to open-ended questions by the amount of information respondents write down.

In MAWI we expect shorter responses and higher rate of non-substantive responses in open-ended questions.

Number of the Respondents

Respondent's Verification

	Validated Group	
Assigned Group	CAWI	MAWI
CAWI	532	0
MAWI	32	481
TOTAL	564	481

Number of the Respondents

	Survey Mode	
Survey Length	CAWI	MAWI
Short	564	481
Long	539	415

Total number of the respondents – 1045

Response Time

Survey Length	Survey Mode	
	CAWI	MAWI
Short	5.28 min.	10.33 min.
Long	15.46 min.	28.31 min.

Profile of the Respondents

There were statistically *significant differences* between the modes concerning:

ü age,

ü education,

ü frequency of mobile Web usage,

ü smartphone ownership.

Respondents *did not differ* in:

ü gender,

ü mobile Web usage experience.

1. Response Rate

Recruitment Stage

	CAWI			MAWI		
	Short	**Long**	**TOTAL**	**Short**	**Long**	**TOTAL**
Number of the invitations	1 963	1 963	3 926	11 163	11 162	22 325
N (number of the completes)	353	380	733	1048	1052	2100
Start Rate	29.2%	30.8%	30.0%	28.3%	28.9%	28.6%
Response Rate***	27.4%	29.3%	28.4%	24.4%	25.0%	24.7%
Droupout Rate***	6.1%	4.6%	5.4%	13.8%	13.4%	13.6%
Agreement Rate***	99.5%	99.2%	99.3%	49.0%	48.0%	48.5%
Respondents who agreed to switch to MAWI (only in CAWI group)	13.3%	10.0%	11.6%			

***p < 0.001 - Chi-square test, comparing MAWI and CAWI (two-tailed)

Main Survey. Response Rate

	CAWI			MAWI		
	Short	**Long**	**TOTAL**	**Short**	**Long**	**TOTAL**
Number of the invitations	380	384	764	625	609	1234
N (number of the completes)	286	278	564	247	234	481
Start Rate***	84.7% (322)	80.7% (310)	82.7% (632)	49.0% (306)	49.3% (300)	49.1% (606)
Response Rate***	84.2% (320)	78.9% (303)	81.5% (623)	41.0% (256)	39.2% (239)	40.1% (495)
Droupout Rate***	0.6% (2)	2.3% (7)	1.4% (9)	16.3% (50)	20.3% (61)	18.3% (111)

***p < 0.001 - Chi-square test, comparing MAWI and CAWI (two-tailed)

The *final cooperation rate* which takes into account response rate at the recruitment stage, agreement rate to participate in the main survey and response rate in the main questionnaire was:

ü CAWI: 23.5%

ü MAWI: 6.4%

Additional Survey

Participation in the additional survey.

ü CAWI – 95.4%

ü MAWI – 81.8% (Chi-square= 24.84, $df = 1$, p < 0.001)

No effect of age, gender, education, cell phone features and experience with mobile Web usage on decision to participate in additional survey in both survey modes.

MAWI – More Mobile?

Where do you fill in this questionnaire?	CAWI	MAWI	Chi-square
At home	77.3%	62.4%	
In office	18.8%	18.1%	
In cafe/bar/restaurant	0.7%	4.2%	
In transport	0.9%	9.4%	70.67***, df=6
At home by friends or relatives	1.1%	2.5%	
Other	1.2%	3.4%	

***p < 0.001 (two-tailed)

2. Response Order Effects

Response Order Effects

How often do you in average use Internet in your cell phone?	CAWI			MAWI		
	Standard Order	Reverse Order	Chi-square	Standard Order	Reverse Order	Chi-square
Every day	44.0%	44.3%		65.7%	65.7%	
4-6 times a week	17.4%	9.6%		18.2%	11.7%	
2-3 times a week	18.8%	15.1%		8.7%	13.8%	
1 time a week	6.8%	7.7%	18.76^{**}, $df = 7$	2.1%	3.8%	13.81 (ns), $df = 7$
2-3 times a month	8.2%	12.2%		4.5%	2.1%	
1 time a month	2.4%	7.0%		0.8%	1.3%	
Several times in a half a year	1.4%	3.3%		0.0%	1.3%	
1 time in a half a year and rarer	1.0%	0.7%		0.0%	0.4%	
N	293	271		242	239	
How long have you been used Internet in your cell phone?						
Less than 3 months	5.8%	4.4%		5.4%	4.2%	
3 months-6 months	8.2%	3.3%		7.9%	5.0%	
6 months-1 year	16.4%	10.0%	21.76^{**}, $df = 5$	12.0%	8.8%	11.57^{*}, $df = 5$
1-2 years	24.2%	18.5%		15.7%	18.8%	
2-3 years	14.3%	18.8%		11.6%	21.3%	
More than 3 years	31.1%	45.0%		47.5%	41.8%	
N	293	271		242	239	

Response Order Effects

	CAWI			MAWI		
	Standard Order	**Reverse Order**	**Chi-square**	**Standard Order**	**Reverse Order**	**Chi-square**
In total how much time were you in Internet yesterday in your cell phone?						
Less than 10 minutes	11.3%	5.6%		8.1%	6.2%	
10 minutes-20 minutes	27.0%	13.4%		19.3%	13.4%	
20 minutes-30 minutes	19.4%	17.7%		21.5%	13.4%	
30 minutes-1 hour	14.9%	21.2%	27.11^{***}; $df = 6$	17.5%	23.7%	13.29^{*}; $df = 6$
1-2 hours	10.5%	20.3%		11.7%	16.5%	
2-3 hours	8.5%	10.8%		10.3%	9.8%	
More than 3 hours	8.5%	10.8%		11.7%	17.0%	
N	248	231		223	224	
How often did you access Web in your cell phone yesterday during the whole day?						
I did not use it	15.4%	14.8%		7.9%	6.3%	
1 time	22.5%	17.3%		12.4%	13.4%	
2-3 times	36.2%	33.9%	6.22 (n.s.) , $df = 5$	31.4%	30.1%	3.26 (n.s.), $df = 5$
4-5 times	13.0%	18.8%		22.3%	20.9%	
6-9 times	6.5%	6.3%		6.6%	10.9%	
10 times and more	6.5%	8.9%		19.4%	18.4%	

Response Order Effects

To what extent are you satisfied or not satisfied with your life in general at the present time?	CAWI			MAWI		
	Standard Order	Reverse Order	Chi-square	Standard Order	Reverse Order	Chi-square
Fully satisfied	23.8%	16.7%		17.7%	12.5%	
Rather satisfied	42.6%	46.3%		44.2%	48.6%	
Both yes and no	23.1%	23.3%	6.06 (ns), $df = 5$	27.0%	28.2%	4.58 (ns), $df = 5$
Less than satisfied	8.3%	9.4%		8.8%	7.8%	
Not at all satisfied	1.4%	2.4%		1.8%	1.2%	
Difficult to answer	0.7%	1.7%		0.4%	1.6%	
N	293	271		242	239	
Do you think that in the next 12 months you and your family will live better than today or worse?						
You will live much better	33.9%	28.9%		34.5%	32.5%	
You will live somewhat better	37.9%	40.8%		40.7%	36.5%	
Nothing will change	19.1%	16.0%	6.80 (ns), $df = 5$	11.9%	15.3%	3.10 (ns), $df = 5$
You will live somewhat worse	2.5%	2.4%		3.5%	3.1%	
You will live much worse	1.1%	1.4%		0.9%	1.6%	
Difficult to answer	5.4%	10.5%		8.4%	11.0%	
N	293	271		242	239	

Response Order Effects: Ordinal Regression

	Average usage of mobile Web		Experience in using mobile Web		The frequency of mobile Web usage yesterday		Time spent in mobile Web yesterday		Satisfaction with the life		Life in the next 12 months	
	CAWI	MAWI	CAWI	MAWI	CAWI	MAWI	CAWI	MAWI	CAWI	MAWI	CAWI	MAWI
Reverse Order	-0.26 (0.15)	-0.08 (0.19)	-0.67 (0.15)	-0.02 (0.17)	-0.27 (0.15)	-0.07 (0.16)	-0.73 (0.16)	-0.46 (0.17)	-0.27 (0.16)	-0.09 (0.17)	-0.22 (0.15)	-0.13 (0.18)
Wald Chi-square	2.82^+	0.20	18.77^{**}	0.02	3.09^+	0.19	20.02^{***}	7.64^{**}	3.13^+	0.27	1.97	0.50

$^*p < 0.05,$ $^{**}p < 0.01,$ $^{***}p < 0.001$, + p < 0.10 (two-tailed)

3. Social Desirability Bias

Social Desirability Bias

	CAWI	MAWI	Chi-square, $df = 2$
Stealing in the shop			
Yes	27.3%	32.3%	
No	68.8%	64.1%	2.84 (ns)
Difficult to answer	3.9%	3.6%	
Abortions			
Always permissible	6.7%	8.9%	
Permissible only in certain circumstance	75.0%	72.8%	1.68 (ns)
Never permissible	18.4%	18.3%	
Homosexual relationships			
Always permissible	13.5%	16.6%	
Permissible only in certain circumstance	27.8%	28.7%	2.19 (ns)
Never permissible	58.6%	54.7%	
Sex with other partners if people are married			
Always permissible	13.2%	12.8%	
Permissible only in certain circumstance	47.7%	49.4%	0.28 (ns)
Never permissible	39.1%	37.8%	

Social Desirability Bias

		CAWI		MAWI		Chi-square
		%	**N**	**%**	**N**	
1. Neighbour shouts at children	**a**	97.2%	524	95.4%	396	2.32 (ns), $df=2$
	b	27.6%	149	19.0%	79	13.74**, $df=2$
	c	90.2%	486	90.6%	376	0.05 (ns), $df=1$
2. Sexual molestation	**a**	93.7%	505	94.0%	390	0.05 (ns), $df=2$
	b	73.7%	397	72.3%	300	0.34 (ns), $df=2$
	c	83.7%	451	82.7%	343	0.18 (ns), $df=1$
3. Elderly woman steals cheese	**a**	85.7%	462	84.6%	351	4.36 (ns), $df=2$
	b	18.2%	98	16.6%	69	0.49 (ns), $df=2$
	c	38.2%	206	31.1%	129	5.24*, $df=1$
4. Youngsters shout at foreign-born woman	**a**	94.1%	507	95.1%	397	1.43 (ns), $df=2$
	b	18.4%	99	17.3%	72	3.64 (ns), $df=2$
	c	83.7%	451	83.6%	347	0.00 (ns), $df=1$
5. Neighbour beats his children	**a**	96.1%	518	97.3%	404	1.31 (ns), $df=2$
	b	33.4%	180	27.0%	112	5.29 (ns), $df=2$
	c	88.7%	478	86.7%	360	0.82 (ns), $df=1$
6. Teenage pregnancy	**a**	73.7%	397	72.3%	300	0.93 (ns), $df=2$
	b	27.6%	149	25.8%	107	0.45 (ns), $df=2$
	c	57.9%	312	54.9%	228	0.10 (ns), $df=1$

*$p < 0.05$, **$p < 0.01$ (two-tailed)
a – % reporting attitudes to deviant behavior as "bad" and "very bad"
b – % reporting the occurrence of deviant behavior ("sometimes" and "often")
c – % reporting they were annoyed by deviant behavior

4. Non-Substantive Responses

Non-Substantive Responses

		CAWI		MAWI		Chi-square, $df = 1$
		%	**N**	**%**	**N**	
Non-sensitive questions. Difficult to answer						
Level of satisfaction with the life		1.2%	7	1.0%	5	0.09 (n.s.)
Evaluation of the life of family in the next 12 months		8.0%	45	9.8%	47	1.04 (n.s.)
Frequency of eating healthy food		1.2%	7	1.7%	8	0.33 (n.s.)
Evaluation of the health		0.8%	2	0.9%	2	0.02 (n.s.)
Sensitive questions. Difficult to answer						
Stealing in the shop		3.9%	21	3.6%	15	0.05 (n.s.)
Neighbour shouts at children	a	1.5%	8	2.2%	9	0.63 (n.s.)
	b	0.9%	5	2.9%	12	5.17*
Sexual molestation	a	2.4%	13	2.4%	10	0.00 (n.s.)
	b	0.9%	5	1.2%	5	0.17 (n.s.)
Elderly woman steals cheese	a	8.9%	48	7.0%	29	1.16 (n.s.)
	b	1.7%	9	1.4%	6	0.08 (n.s.)
Youngsters shout at foreign-born woman	a	3.7%	20	2.4%	10	1.30 (n.s.)
	b	0.7%	4	2.2%	9	3.55 (n.s.)
Neighbour beats his children	a	2.8%	15	1.7%	7	1.25 (n.s.)
	b	1.1%	6	1.9%	8	1.08 (n.s.)
Teenage pregnancy	a	8.5%	46	10.4%	43	0.93 (n.s.)
	b	1.5%	8	1.7%	7	0.06 (n.s.)

*p < 0.05 (two-tailed) , ***p < 0.001 (two-tailed)
a – attitude to deviant behavior
b – occurrence of deviant behavior

Non-Substantive Responses

	CAWI		MAWI		Chi-square, $df = 1$
	%	N	%	N	
Income					
Difficult to answer	9.8%	55	4.0%	19	13.28***
Missings	0%	0	55.7%	268	422.63***
Out-of-range values	2.1%	12	1.9%	4	0.05 (n.s.)
Non-sensitive questions. None of the above					
Web-sites respondents use in their cell phones	0%	0	0%	0	
Procedures respondents followed to feel healthy	0.6%	3	1.9%	8	3.87*

*p < 0.05 (two-tailed) , ***p < 0.001 (two-tailed)

a – attitude to deviant behavior

b – occurrence of deviant behavior

5. Non-differentiation, acquiescence and extreme response style

Non-Substantive Responses

	Mean CAWI	Mean MAWI	Acquiescence CAWI	Acquiescence MAWI	Extreme CAWI	Extreme MAWI
I have little influence over things that happen to me	3.06	3.13	5.9%	3.9%	38.6%	42%
I can always execute my plans	1.92	1.94	21.7%	19.5%	22.6%	20.0%
I always feel helpless when problems appear in my life	3.13	3.16	2.8%	3.6%	34.0%	37.1%
What happens to me in the future in large part depends on me	1.49	1.43	58.1%	61.4%	58.8%	61.6%
What I can do changes my life very little	3.33	3.32	1.7%	1.2%	46.4%	44.3%
N	539	415	539	415	539	415
Variance	4.72	4.77				
T	t=-0.28 (ns)		t=1.67 (ns)		t=1.45 (ns)	

6. Length of Open-Ended Questions

Length of Open-Ended Questions

	CAWI	MAWI	t	MAWI Feature phone	MAWI Smartphone	t	MAWI Nontouchscreen phone	MAWI Touchscreen phone	t
Number of the characters	**73.0**	**48.0**	**9.86*****	**45.0**	**48.7**	**-1.03 (ns)**	**46.8**	**48.6**	**-0.59 (ns)**
N	**533**	**451**		**88**	**363**		**155**	**296**	
Time (seconds)	**86.9**	**125.4**	**-8.17*****	**152.7**	**118.4**	**3.52*****	**139.4**	**118.0**	**2.58***
N	**533**	**451**		**92**	**359**		**156**	**295**	

***p < 0.001 (two-tailed)

Key Findings

1. Response rates.

In MAWI RR is lower than in CAWI. Cooperation level is higher among younger age groups, males and those who have good experience in using mobile Web.

2. Response tendencies, response order effects.

We did not find support for the hypothesis that satisficing is stronger in MAWI compared to CAWI. Possibly there is weaker response order effects and higher percentage of non-substantive responses in the long check-box questions in MAWI.

3. Social desirability.

We found no difference in respondent´s candor between survey modes.

4. Length of open-ended questions.

Response length is shorter in MAWI. No effect of mobile device on the length of the answer in MAWI.

Thank you for your attention!