Comparability of web and telephone survey modes for the measurement of subjective well-being

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A day we will remember

Administering surveys

Web-surveys are:

Cool

- convenient for respondents (time and space);
- no interviewer -> less social desirability bias;
- possibility include multimedia elements;
- less expensive;
- less prone to coding errors.

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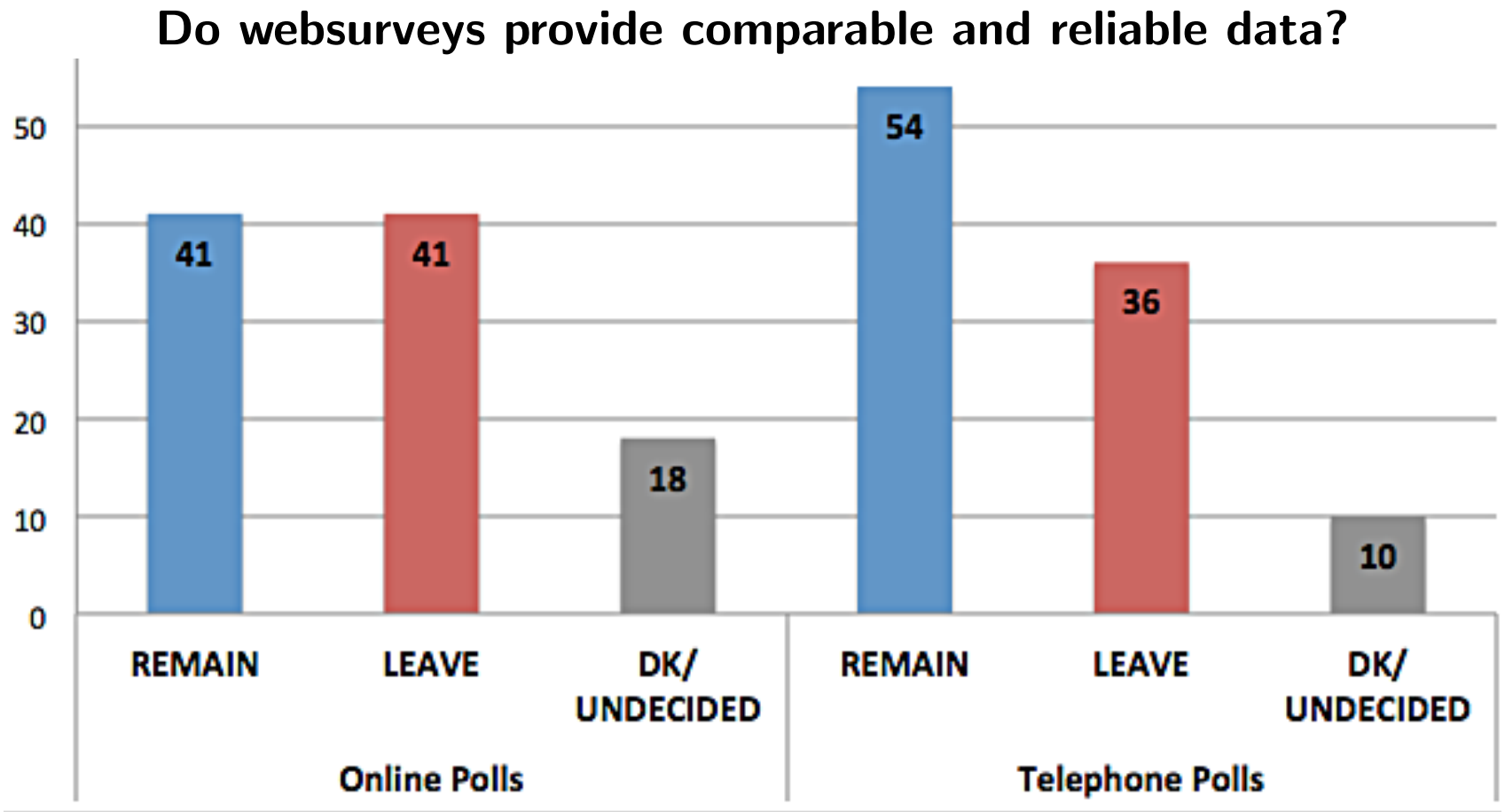
Crap

- sampling design;
- error induced by the survey mode.

Polls on Brexit



Source: http://blogs.lse.ac.uk/brexitvote/2016/02/22/polls-apart-why-we-need-to-treat-all-eu-referendum-polling-with-caution/

Limits to comparability

- Population effects:
  - different composition of the sample;
  - possibility to use weights, but problems with unobservables.
- Response effects:
  - satisficing: websurveys using grids may induce similar answers to battery of questions.
  - social desirability: websurveys provide privacy and people may say the truth.
  - acquiescence: positive/negative answers in telephone/web surveys.
  - recency & primacy: preference for last/first offered answer in telephone/web surveys.
  - measurement error: absence of interviewer reduces quality of the answers.
- Relationships between variables:
  - nearly identical R^2 in regression models
  - few statistical differences between beta coefficients

What we do not know

The comparability of subjective measures collected on nationally representative samples using telephone and web surveys received little attention.

Our contribution:

We test whether the use of websurveys alters people's answers to 5 questions on SWB collected in Luxembourg using telephone and web surveys.

Websurveys are a convenient and reliable mode to collect subjective data.

However, to minimize the risk of biasing the results it is better to gradually shift from telephone to web surveys.

Global Entrepreneurship Monitor

Features:

- Luxembourg is the only country in the consortium monitoring SWB in 2013, 2014 and 2015;
  - CATI: randomly sampled from the telephone registry;
  - web-survey: randomly sampled from a registry of 14000 e-mail contacts;
- internet penetration in 2013: 93.8%.
- 6000 respondents aged 18 - 64: 50% CATI; 50% web-survey;

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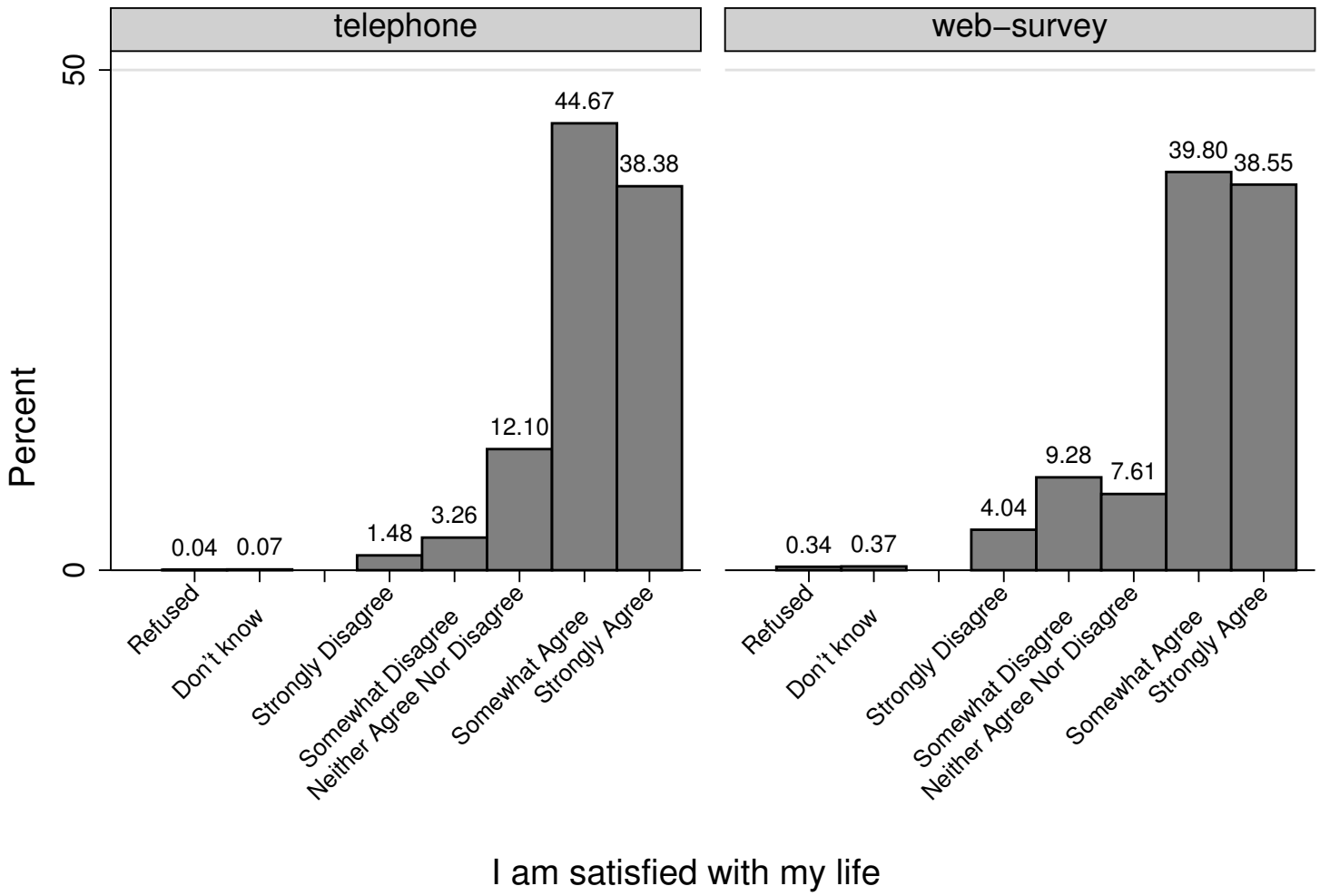
Key-variables:

Five proxies of subjective well-being:

- I am satisfied with my life;
- So far I have obtained the important things I want in life;
- If I could live my life again, I would not change anything;
- The conditions of my life are excellent;
- In most ways my life is close to my ideal.

What do the data tell?

$$\overline{SWB}_{tel} \quad \overline{SWB}_{web}$$
$$4.15 \neq 4.00$$



Is there a problem with the survey mode?

We use 2 complementary strategies:

1. Does the survey tool affect the SWB gap? a Blinder-Oaxaca decomposition:

$$\Delta SWB = \underbrace{(\overline{\mathbf{X}}_A - \overline{\mathbf{X}}_B) \cdot \beta^*}_{explained} + \underbrace{\overline{\mathbf{X}}_A \cdot (\beta_A - \beta^*) + \overline{\mathbf{X}}_B \cdot (\beta^* - \beta_B)}_{unexplained} \quad (1)$$

2. In which direction is the bias?
   - CEM: it approximates the randomized control trial. It ensures that two groups of respondents are similar on the distribution of the covariates;
   - Multinomial logit on CEM sub-sample;

   estimating the influence of survey mode on well-being using pseudo-experimental data.

Results: Oaxaca decomposition

	coefficient	z-stat	p-values
Difference:	0.151	3.363	0.001
Decomposition:			
Explained	-0.001	-0.615	0.538
Telephone	-0.246	-5.799	0.000
Web-survey	0.399	19.415	0.000
Observations	4230		

- the life satisfaction gap does not depend on socio-demographic characteristics;
- the use of web-survey is associated with a higher probability to report low levels of life satisfaction.

Results: Multinomial logit + CEM

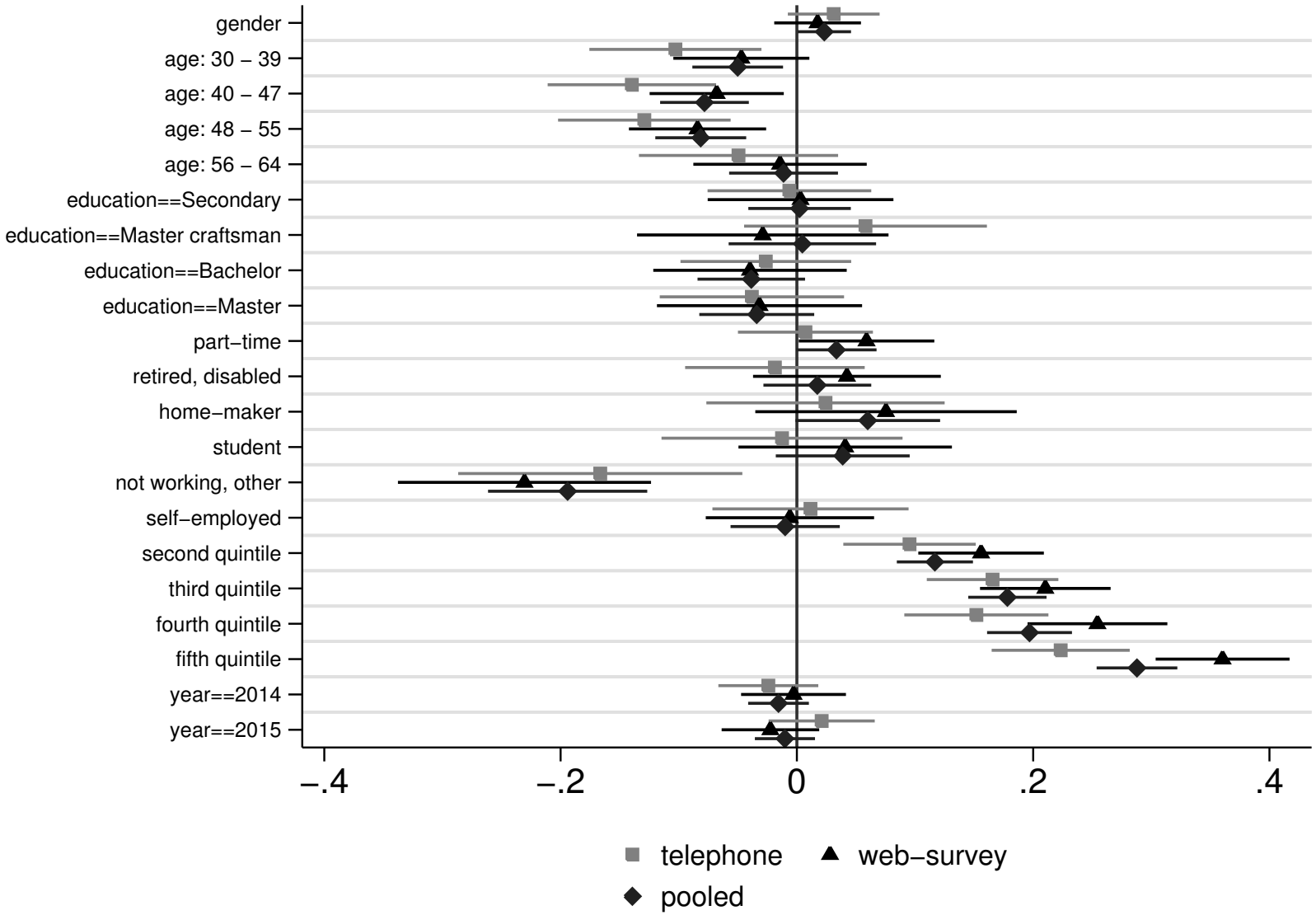
subjective well-being:	1	2	3	4	5
survey mode	0.027***	0.047***	-0.043**	-0.046	0.014
	(0.007)	(0.011)	(0.014)	(0.024)	(0.023)
Observations	4230	4230	4230	4230	4230

Notes: Estimations for individuals with Internet access at home.

CEM robust standard errors in parentheses * p<.10, ** p<.05, *** p<.01

Implications for statistical inference

Figure: Coefficient plot of marginal effects after ordered probit regression.



Final remarks

Our results are compatible with the explanations in terms of **social desirability**, **primacy effect**, and **acquiescence**.

Yet, available studies do not provide any explanation for why web respondents choose the neutral category less often. Is it because they can make a more informed choice?

We cannot compare with face-to-face interviews. We do not know whether the results change using well-being on a 10-points scale.

- Web-surveys are a convenient and reliable tool to collect subjective data;
- They are safe to run statistical inference;
- Attention when using the data for descriptive purposes, especially in mixed mode surveys.

Thanks a lot for your attention!

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Descriptive statistics

variable	mean	sd	min	max	obs
Women	0.519	0.500	0	1	5644
Age (in years)	42.69	12.66	18	64	5644
Age squared / 100	19.82	10.58	3.240	40.96	5644
Secondary education	0.478	0.500	0	1	5502
Master craftsman	0.0558	0.230	0	1	5502
Bachelor	0.252	0.434	0	1	5502
Master	0.146	0.353	0	1	5502
Part-time	0.132	0.338	0	1	5545
Retired, disabled	0.108	0.310	0	1	5545
Home-maker	0.0516	0.221	0	1	5545
Student	0.0763	0.265	0	1	5545
Not working, other	0.0305	0.172	0	1	5545
Self-employed	0.0512	0.220	0	1	5545
Income (log)	10.82	0.547	9.014	11.42	4363
Year	–	–	2013	2015	5644

Correlation matrix of the proxies of subjective well-being.

	life satisfaction	important things in life	not change anything	excellent life conditions	life close to ideal
life satisfaction	1				
important things in life	0.60***	1			
not change anything	0.36***	0.39***	1		
excellent life conditions	0.56***	0.51***	0.36***	1	
life close to ideal	0.60***	0.50***	0.37***	0.56***	1

Alternative proxies of well-being

Variable	$\overline{SWB}_{tel}$		$\overline{SWB}_{web}$
important things in life	3.98		3.97
not change anything	3.13		3.11
my life is excellent	3.82	$\neq$	3.71
close to my ideal	3.68	$\neq$	3.64

Oaxaca decomposition for 2 alternative variables

	coefficient	z-stat	p-values
The conditions of my life are excellent:			
Difference:	0.149	4.704	0.000
Decomposition:			
Explained	−0.009	−1.357	0.175
Telephone	−0.332	−3.836	0.000
Web-survey	0.490	5.308	0.000
Observations	4229		
In most ways my life is close to my ideal:			
Difference:	0.062	2.374	0.018
Decomposition:			
Explained	−0.003	−1.199	0.231
Telephone	−0.483	−10.962	0.000
Web-survey	0.548	13.801	0.000
Observations	4220		

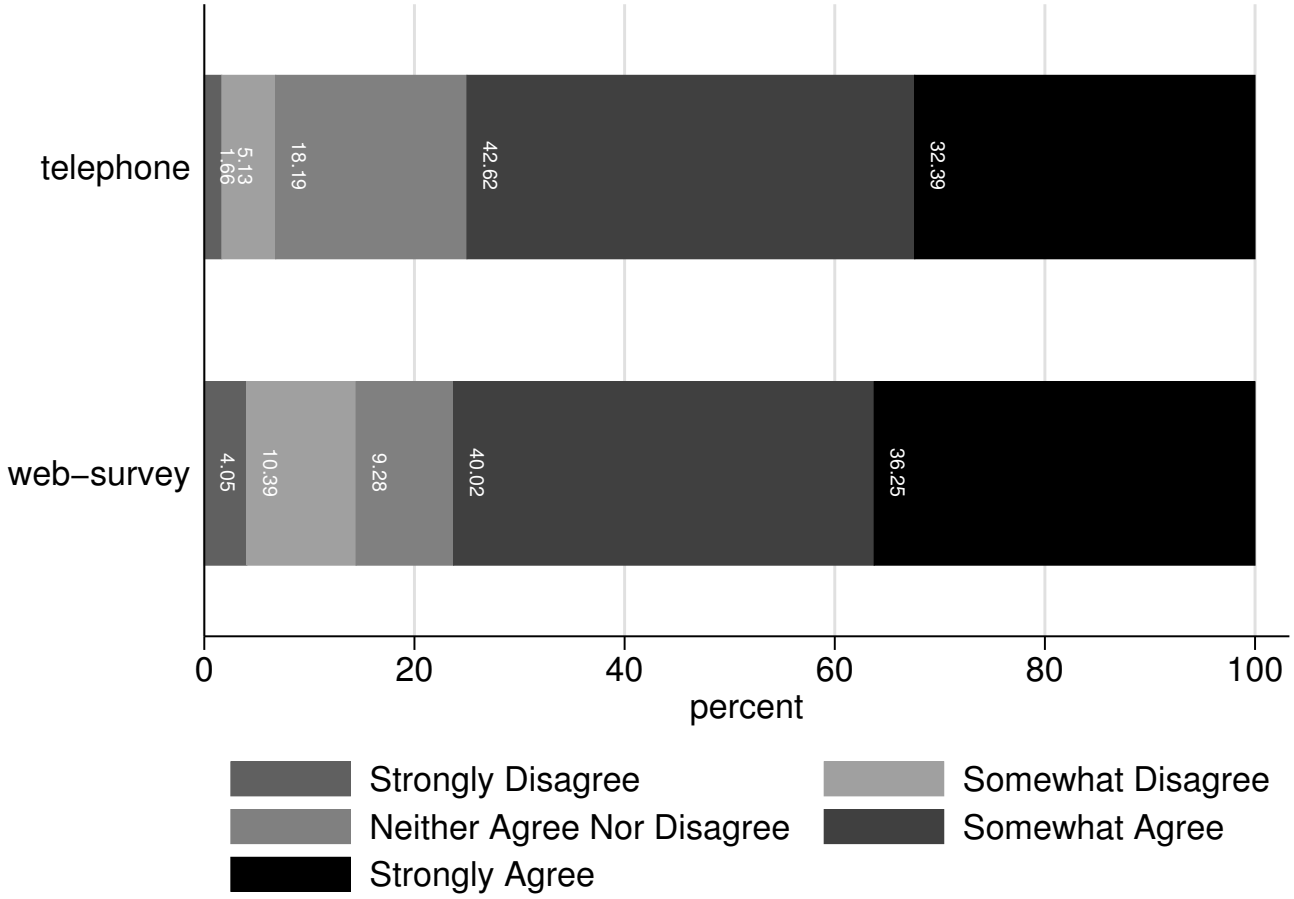
Note: Estimations for individuals with Internet access and fixed phone line at home.

Alternative proxies of well-being: marginal effects / CEM

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The conditions of my life are excellent:					
survey mode (web)	0.030***	0.066***	−0.069***	−0.059*	0.032
	(0.007)	(0.012)	(0.018)	(0.024)	(0.020)
Observations	4227	4227	4227	4227	4227
In most ways my life is close to my ideal:					
survey mode (web)	0.024**	0.045***	−0.140***	0.033	0.038*
	(0.008)	(0.012)	(0.019)	(0.024)	(0.018)
Observations	4221	4221	4221	4221	4221
So far I have obtained the important things I want in life:					
survey mode (web)	0.022**	0.029*	−0.120***	−0.020	0.089***
	(0.007)	(0.014)	(0.018)	(0.024)	(0.022)
Observations	4229	4229	4229	4229	4229
If I could live my life again, I would not change anything:					
survey mode (web)	0.016	0.098***	−0.195***	0.093***	−0.012
	(0.015)	(0.018)	(0.020)	(0.022)	(0.015)
Observations	4193	4193	4193	4193	4193

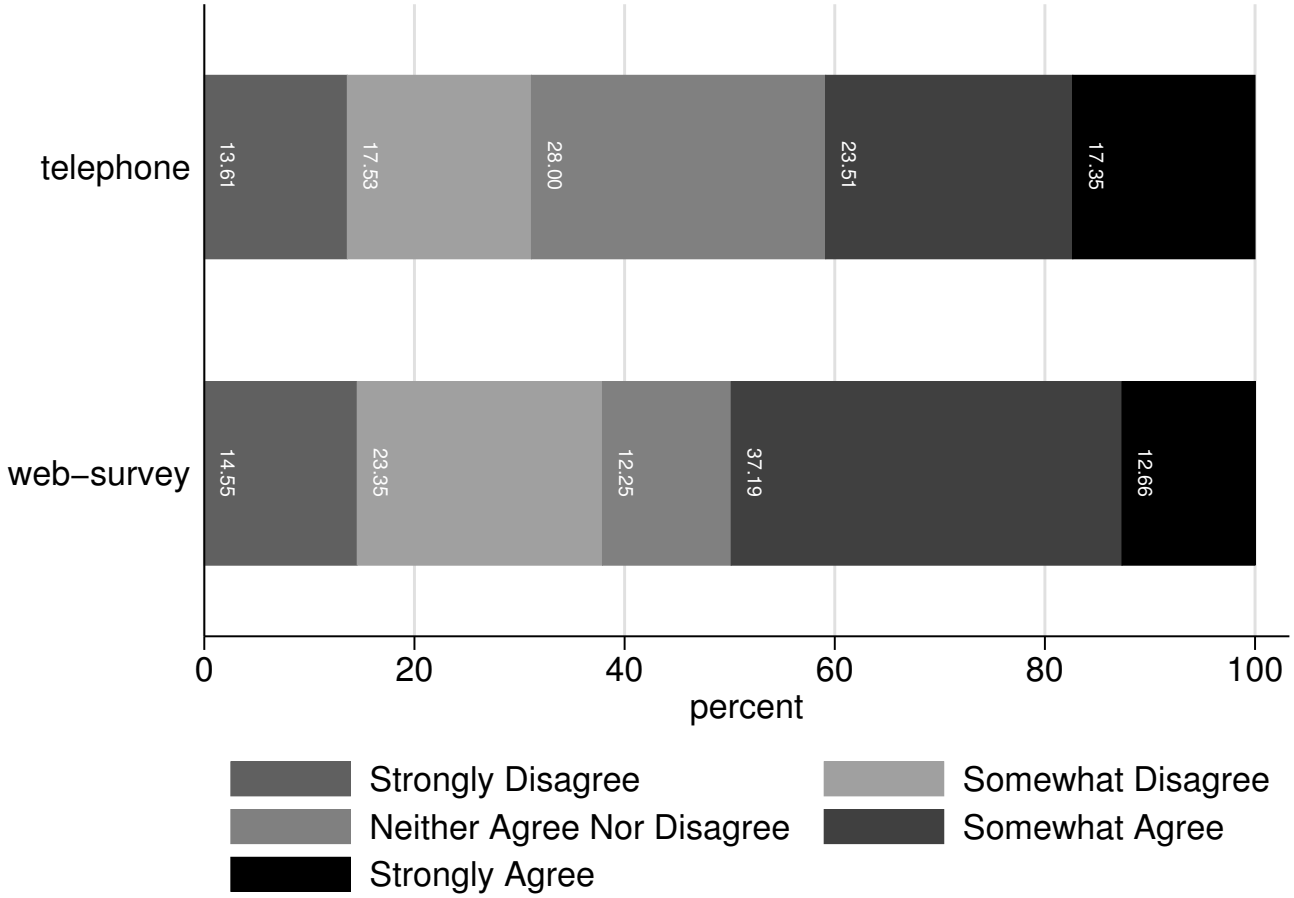
Coefficients for control variables are omitted for brevity.
CEM robust standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$.

Figure: Distribution of the answer to the statement "So far I have obtained the important things I want in life" by survey mode.



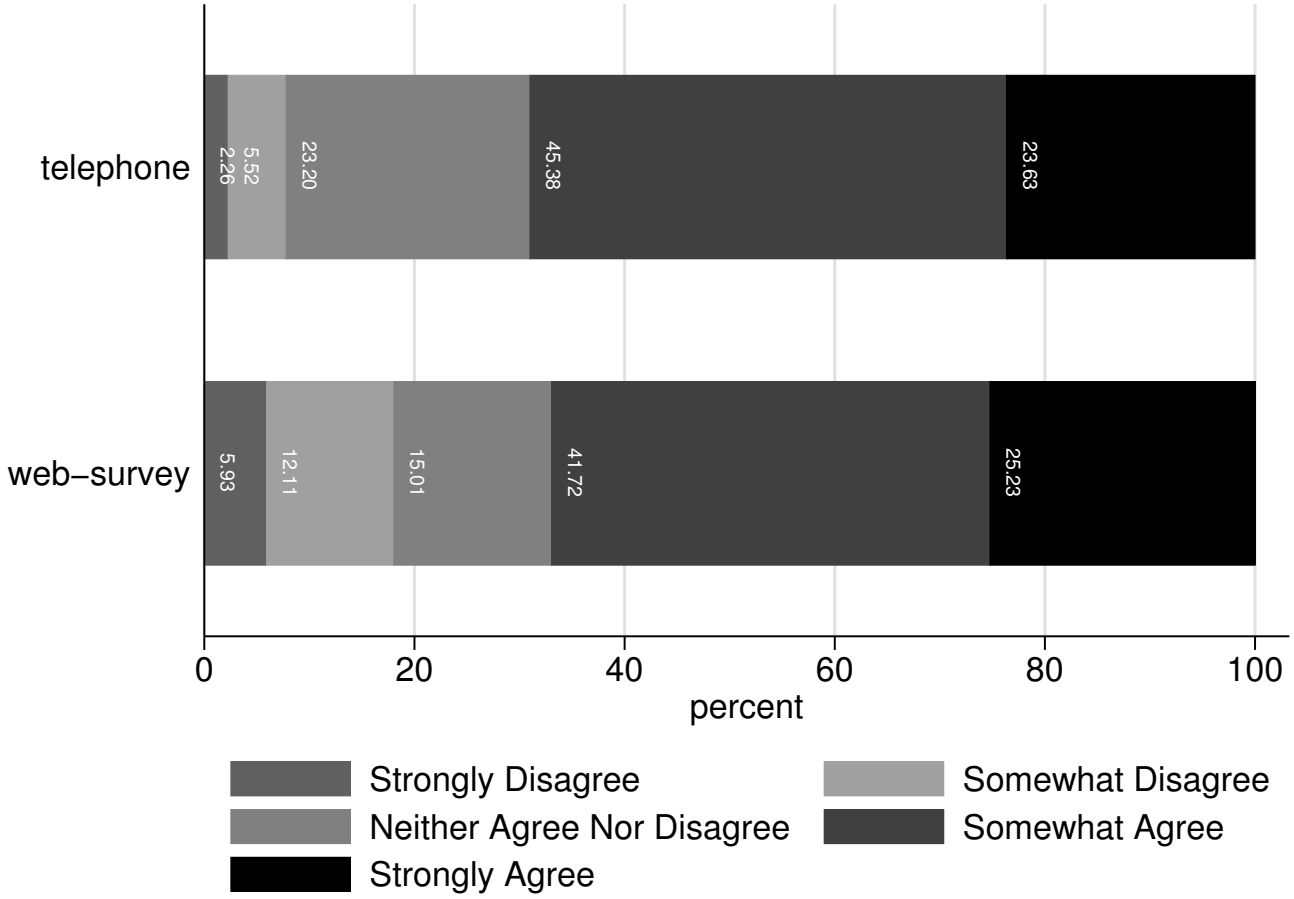
Note: Refused = 0.27%; Don't know = 0.37%. Average score for respondents using telephone survey = 3.98; Average score for respondents using web-survey = 3.97. The t-test indicates that we cannot reject the null that the two averages are equal.

Figure: Distribution of the answer to the statement "If I could live my life again, I would not change anything" by survey mode.



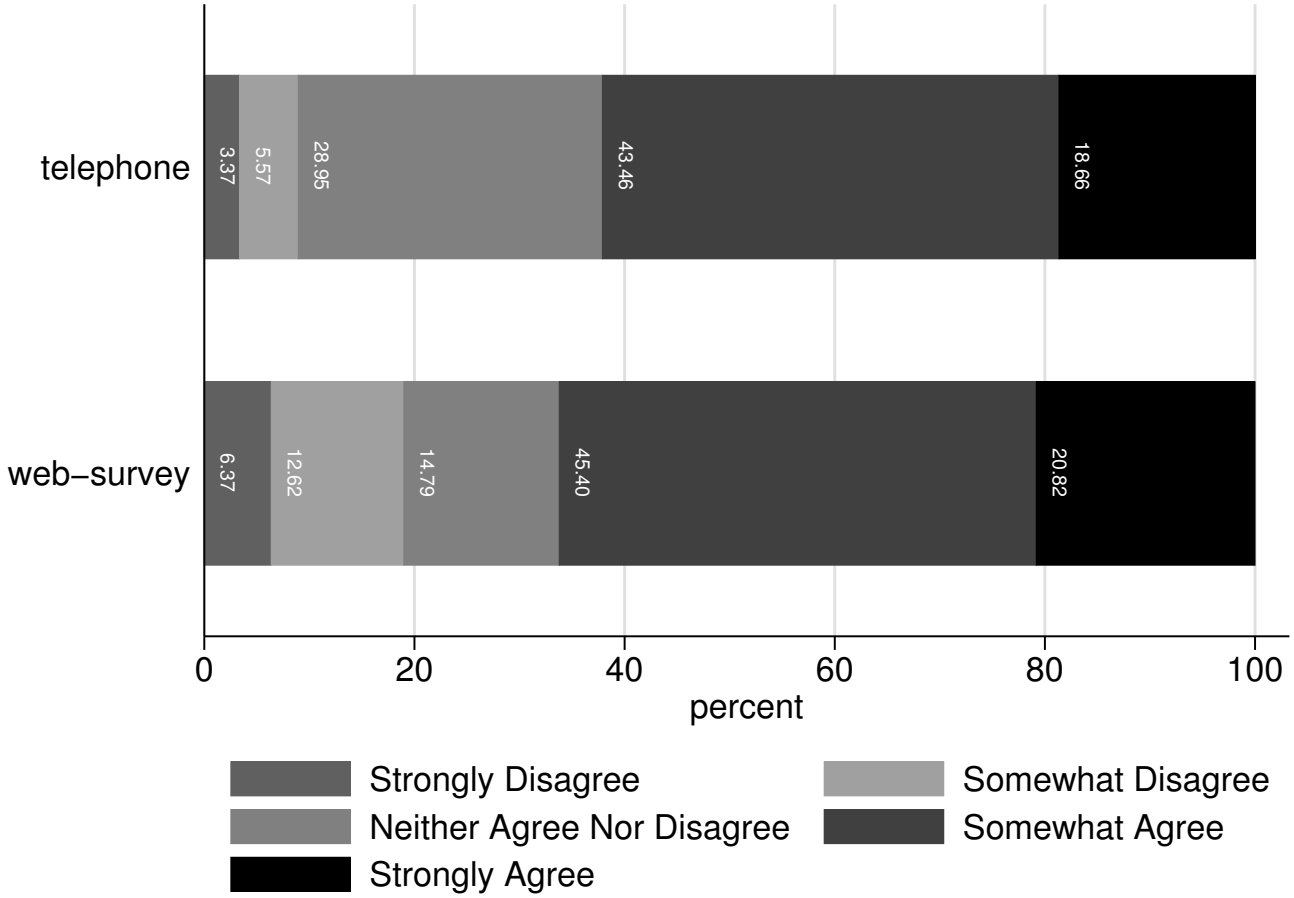
Note: Refused = 0.41%; Don't know = 2.16%. Average score for respondents using telephone survey = 3.13; Average score for respondents using web-survey = 3.11. The t-test indicates that we cannot reject the null that the two averages are equal.

Figure: Distribution of the answer to the statement "The conditions of my life are excellent" by survey mode.



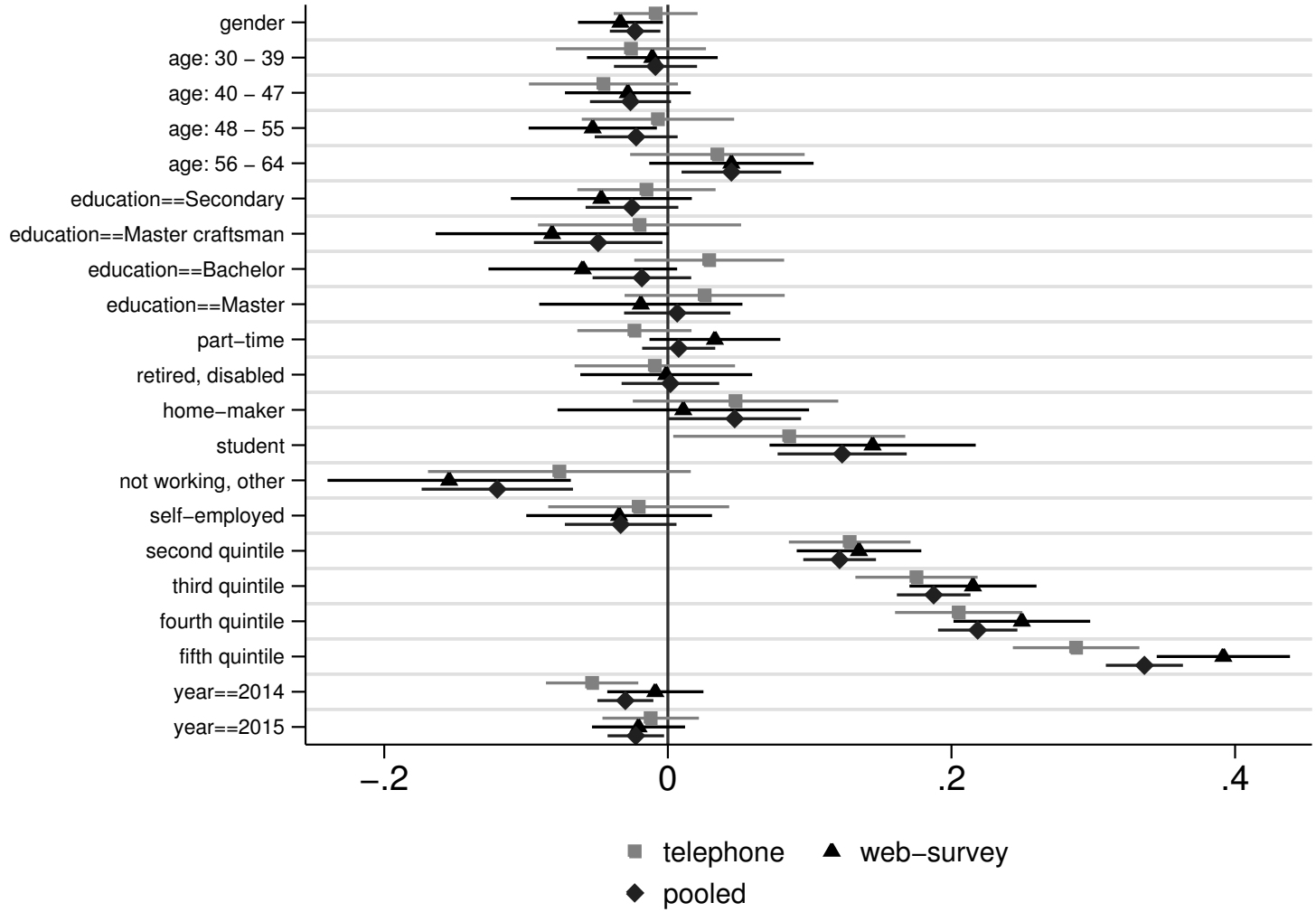
Note: Refused = 0.25%; Don't know = 0.25%. Average score for respondents using telephone survey = 3.82; Average score for respondents using web-survey = 3.71. The t-test indicates that the two averages are significantly different from each other.

Figure: Distribution of the answer to the statement "In most ways my life is close to my ideal" by survey mode.



Note: Refused = 0.37%; Don't know = 0.53%. Average score for respondents using telephone survey = 3.68; Average score for respondents using web-survey = 3.64. The t-test indicates that the two averages are significantly, although weakly, different from each other.

Figure: Coefficient plots of the marginal effects of a standard set of correlates of life satisfaction on the probability to strongly agree with the sentence: "The conditions of my life are excellent".



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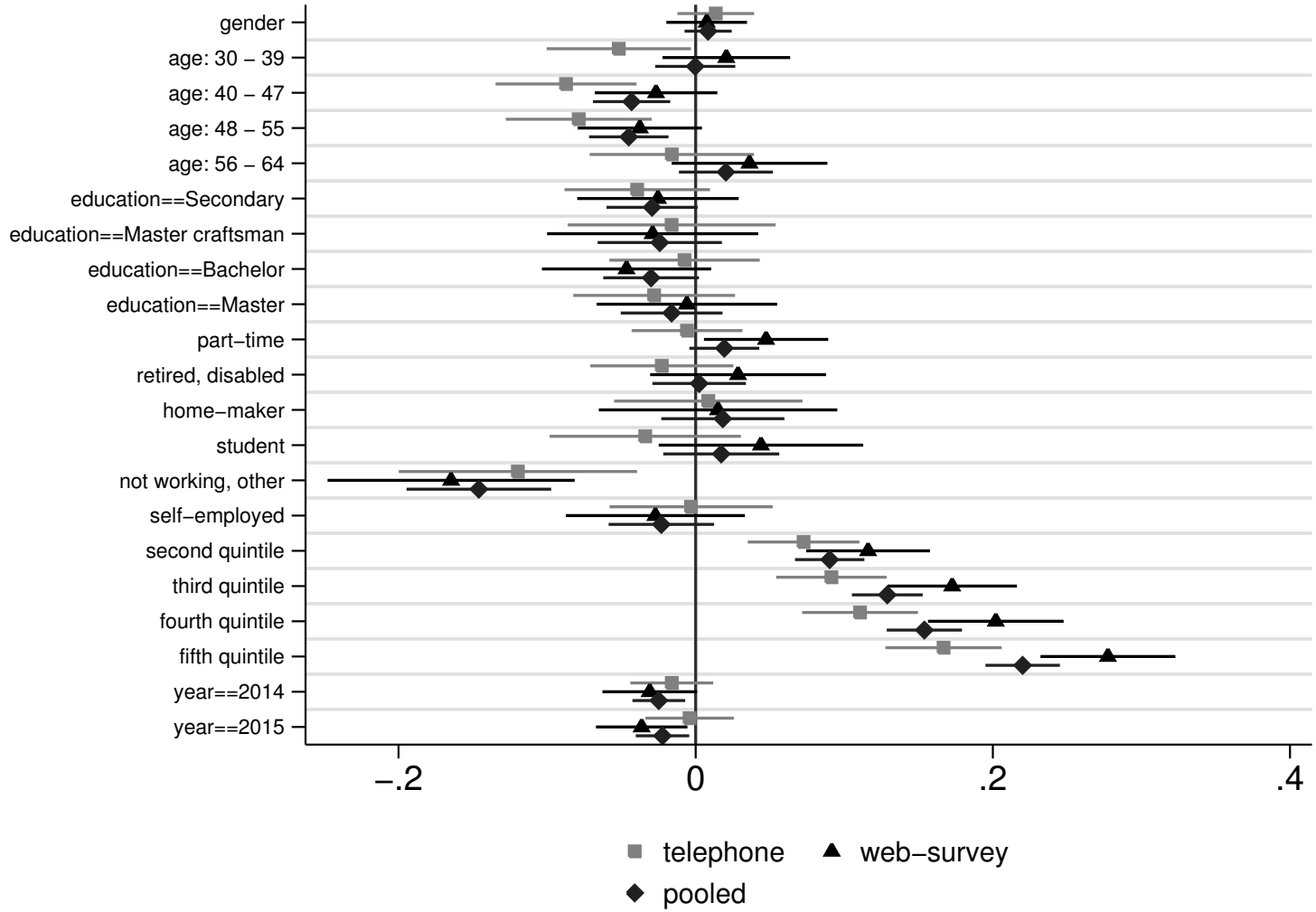

Internet penetration