The Netherlands Institute for Social Research

Different modes and bi-lingual interviewers: An evaluation of two surveys among non-western minorities in the Netherlands

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Background

•In regular population surveys in the Netherland non-western minorities (ethnic groups) tend to be underrepresented.

•A great need for specific information about this group in the Netherlands and elsewhere.

•However, large scale surveys are costly, and surveys of minorities are even more expensive per completed interview than general surveys, due to the lower response rates among non western minorities.

Background (2)

- It is therefore of great importance to determine what are effective strategies for surveying non-western minorities while maintaining a certain level of quality and minimizing the costs.

- In 2010 the SCP commissioned an experiment consisting of two large scale surveys among non-western minorities in the Netherlands.

    - Simultaneously conducting a single mode face-to-face survey and a sequential mixed mode survey among 4 ethnic minorities groups and a Dutch control group.

Research goals

1. To assess the impact of two design features (mode and language) on nonresponse bias as measured by
   - the R-indicator and the related estimated maximum nonresponse bias developed by Statistics Netherlands (Cobben, Schouten and Bethlehem, 2009)
   - the Fraction of missing information (FMI) proposed by Wagner (2009) and the related nonresponse bias estimate.

2. To assess mode effects on the measurement of substantive variables
   - The method developed by Vannieuwenhuyze et al (2010;2012) to disentangle mode and selection effects in an sequential mixed mode design.

The surveys: SIM2011 main and SIM2011 mixed mode

- Same sample frame, sample design, fieldwork length and period
- Each survey consisted of independent samples of (the same) five ethnic groups
- One single mode (face-to-face CAPI) survey and one sequential mixed mode survey (CAWI->CATI->F-t-F CAPI)
- A wide variety of response enhancing measures
  - Translated questionnaires among Turkish and Moroccans
  - Bi-lingual interviewers with the same ethnic background

Overview of both surveys design features

Survey design features	SIM2011 main	SIM2011 mixed mode
Target population	Dutch of Turkish, Moroccan Antillean (including Aruba) and Surinamese origin and 'native' Dutch aged 15 or above and living in the Netherlands.	
Sampling frame	Population register	
Sample design	Stratified two stage probability sample: PSU municipalities; SSU persons. Strata Variable: municipality size (3) : 1) >250 000 inh. ; 2) 50 000-250000 and 3) <50 000	
Mode	F-t-F CAPI	Sequential: CAWI->CATI->F-t-F CAPI

Overview of both surveys design features (2)

Survey design features	SIM2011 main	SIM2011 mixed mode
Sample size per target population Turkish=Tu; Moroccans= Mo; Surinamese=Su; Antilleans = An Dutch = Du	TU=1565 MO=1740 SU=1930 AN=1974 Du=1517	TU=979 MO=1086 SU=1207 AN=1233 DU=947
Length and period of fieldwork	11- 2010 : 5 -2011 (5 months)	11- 2010 : 6- 2011 with a 2 week interruption (5.5 months)
(mean) length of questionnaire	44min	CAWI = 31min CATI = 30min CAPI = 42min

Overview of the response enhancing measures

Response enhancing measures	SIM2011 main	SIM2011 mm
Conditional non-monetary incentives		
Translated questionnaire		
(translated) pre-notification letter plus brochure		
Reminders		
Did not find you at home note		
Bi-lingual interviewers with the same ethnic background as the sample member		
Call back approach using a different interviewer (2nd phase) plus 50% increase in the amount of the unconditional non-monetary incentives		
Toll free number		
Minimum number of contact attempts in f-t-f CAPI 1st phase (max)	6 (12)	6 (15)

Methods used: R-indicator and estimated maximum nonresponse bias

- 'representativity' indicator of a final sample with respect to auxiliary variables included in the model.
- $$\widehat{B_m}(\hat{\rho}, y) = \frac{\left(1 - \hat{R}(\hat{\rho})\right)\hat{S}(y)}{2\hat{\rho}}$$
- Guidelines: R-indicator of 80% to 85% indicates a good representativity, but based on a standard set of 6 variables. $\hat{B}_m$ = 11% to 17%.
- Model: 4 variables and 3 interactions (Gender, age, municipality size (ms), immigration generation (ig), ig*ms, gender*age and ms*age.

Methods used: FMI and potential nonresponse bias estimate

- Fraction of missing information (FMI) is the ratio of the between imputation variability to the total variance of the survey estimates
- If we assume we use a correct model to create our multiple imputations the higher quality dataset would have less uncertainty about the imputed values.
- In the context of survey nonresponse, the FMI is a measure of the proportion of variance due to the uncertainty about the values we have imputed for the nonresponders.
- The imputations can be done by conditioning on sample frame, paradata and complete case data .

Methods used: FMI and potential nonresponse bias estimate (2)

- To the extent that the frame and paradata are correlated with the survey variables the FMI will be reduced below the NR and we would have a better sense of the quality of our data.

- The use of imputations also allows us to assess the potential nonresponse bias of an estimate as the difference between the estimate based on the fully imputed dataset and the complete case only.

- Simple model: gender, age, municipality size, immigration generation, number of contact attempts and having a job

Method used to disentangle mode and selection effects

- Needs a unimode and sequential mixed mode survey among the same population

- Two assumptions
  - Representativity (design choices lead to the same 'coverage' and nonresponse error)
  - Equal measurement error in the same (f-t-f) mode in each survey

Method used to disentangle mode and selection effects

- **The rule of total probability** (p(a) = p(b)*p(a|b) + p(b')*p(a|b'))
  - S(μ) = $\mu_{a|a} - \mu_{a|b} = \frac{1}{1-\tau_a} * (\mu_{a|a} - \mu_a)$
  - M(μ) = $\mu_{a|b} - \mu_{b|b} = \frac{1}{1-\tau_a} * \mu_a - \frac{\tau_a}{1-\tau_a} * \mu_{a|a} - \mu_{b|b}$

- **Choices and limitations**: method is developed to disentangle two modes and not three.
  - Combine phone and web to one mode
    - Phone was marginal
    - F-t-F had to be single

Results

- R-indicator and estimated maximum nonresponse bias (FMI had similar results) of the final sample composition among each ethnic group per survey

- See handouts for the impact of each mode and call back attempts on the estimated maximum nonrespons bias among each ethnic group for each survey.

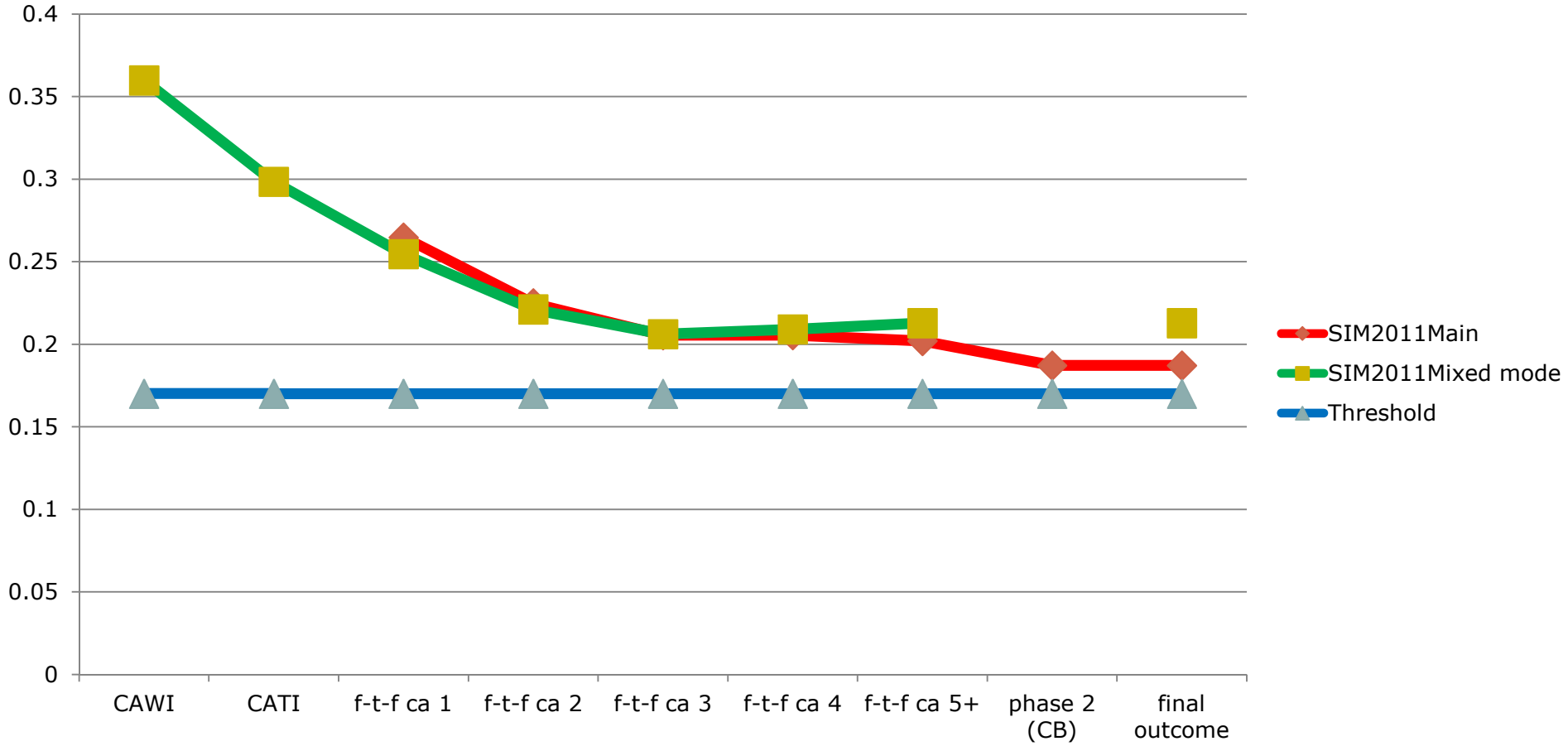
- The impact of bi-lingual interviewers on the maximum nonresponse bias among Moroccans and Turkish.

- Mode and selection effects (F2F vs. CAWI/CATI)

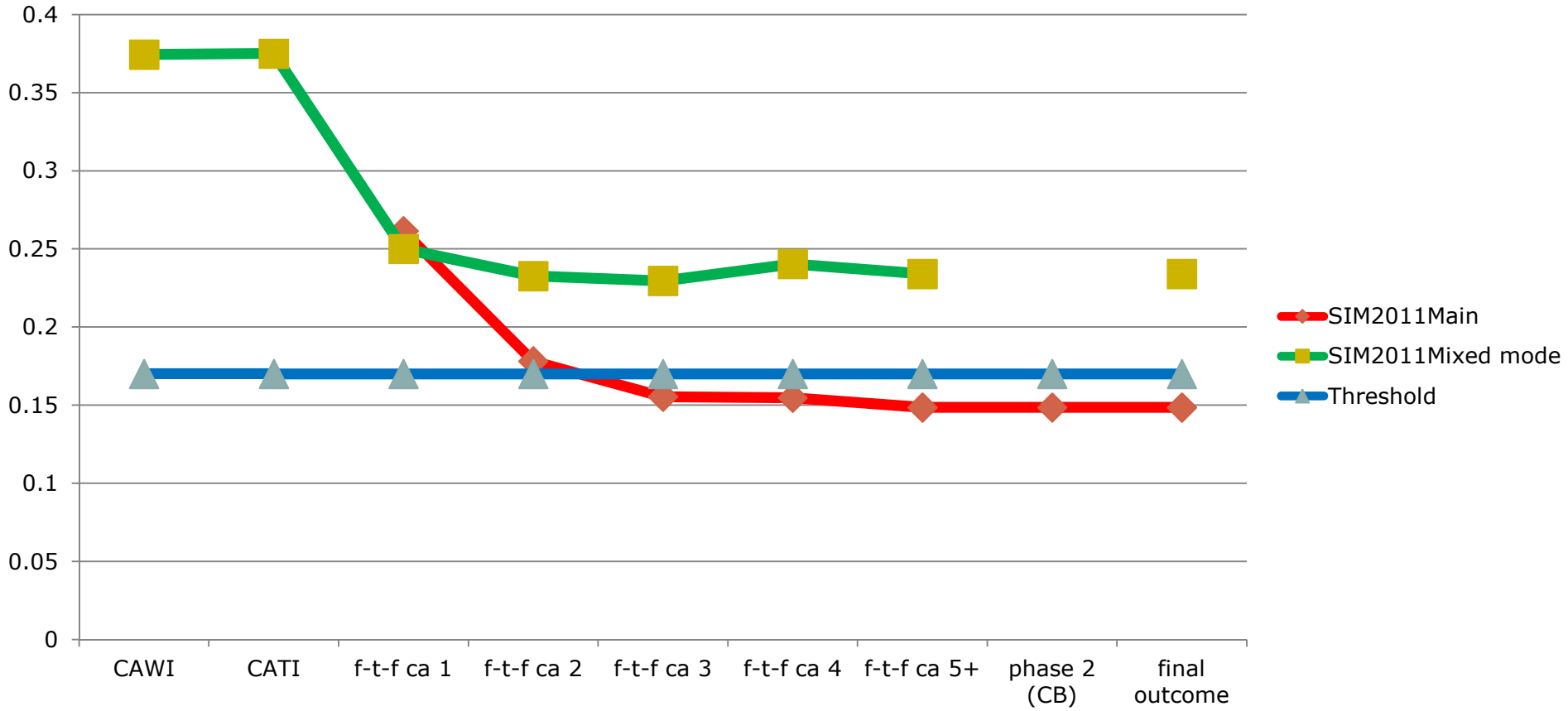
Results: R-indicator and maximum nonresponse bias

	Turkish		Moroccans		Surinamese		Antilleans		Dutch	
	Main	MM	Main	MM	Main	MM	Main	MM	Main	MM
RR_1 (%)	52.1	54.5	48.0	51.7	41.0	43.1	44.2	44.4	53.8	57.1
$\hat{R}$ (%)	80.5*	76.8	85.7*	75.8	86.6*	80.7	85.6*	79.1	85.5*	80.5
$\hat{B}_m$ (%)	18.8	21.4	14.8	23.4	16.4	22.4	16.4	23.4	13.4	17.0

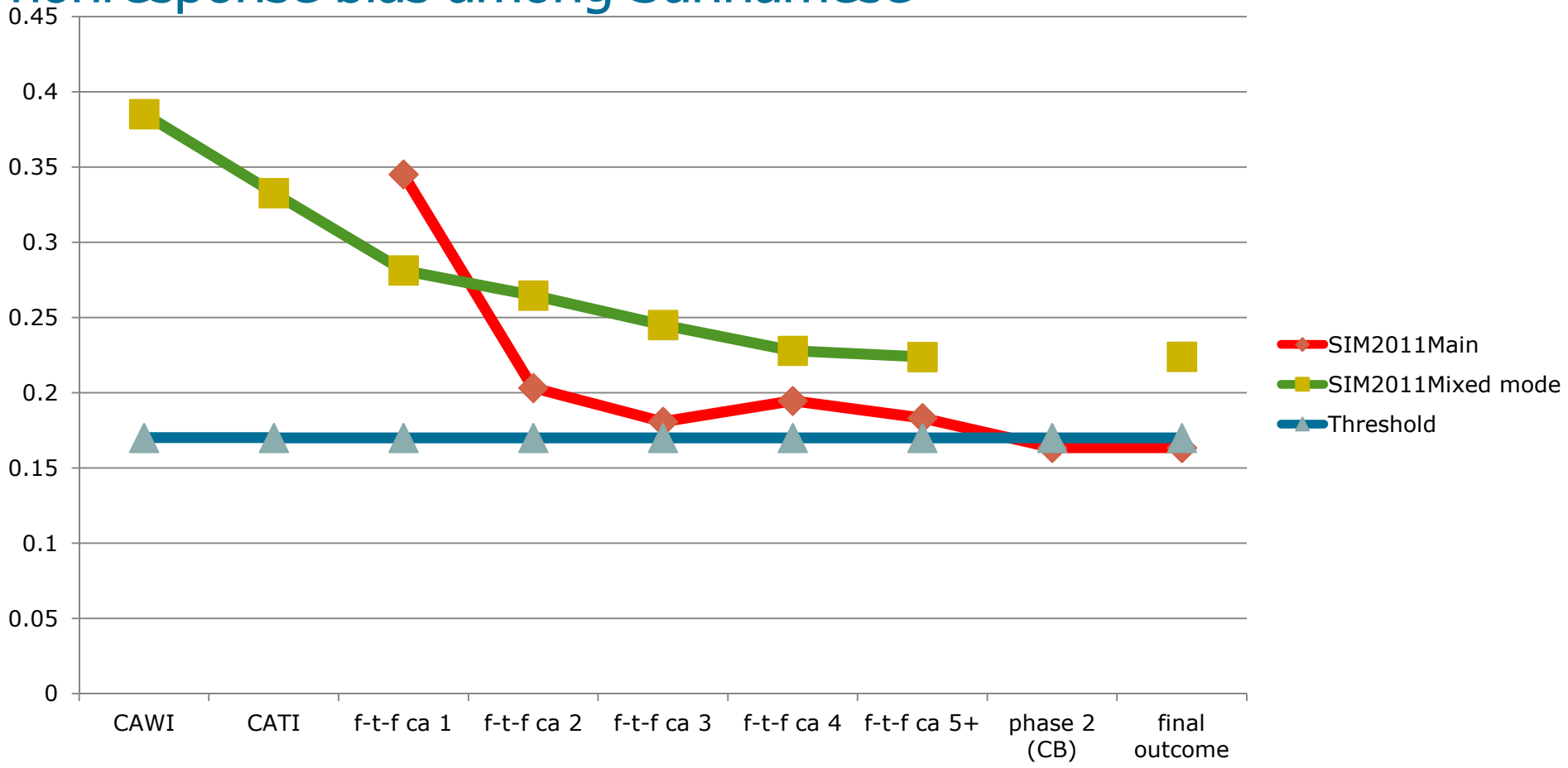
The impact of different design features on the (est.) maximum nonresponse bias among Turkish



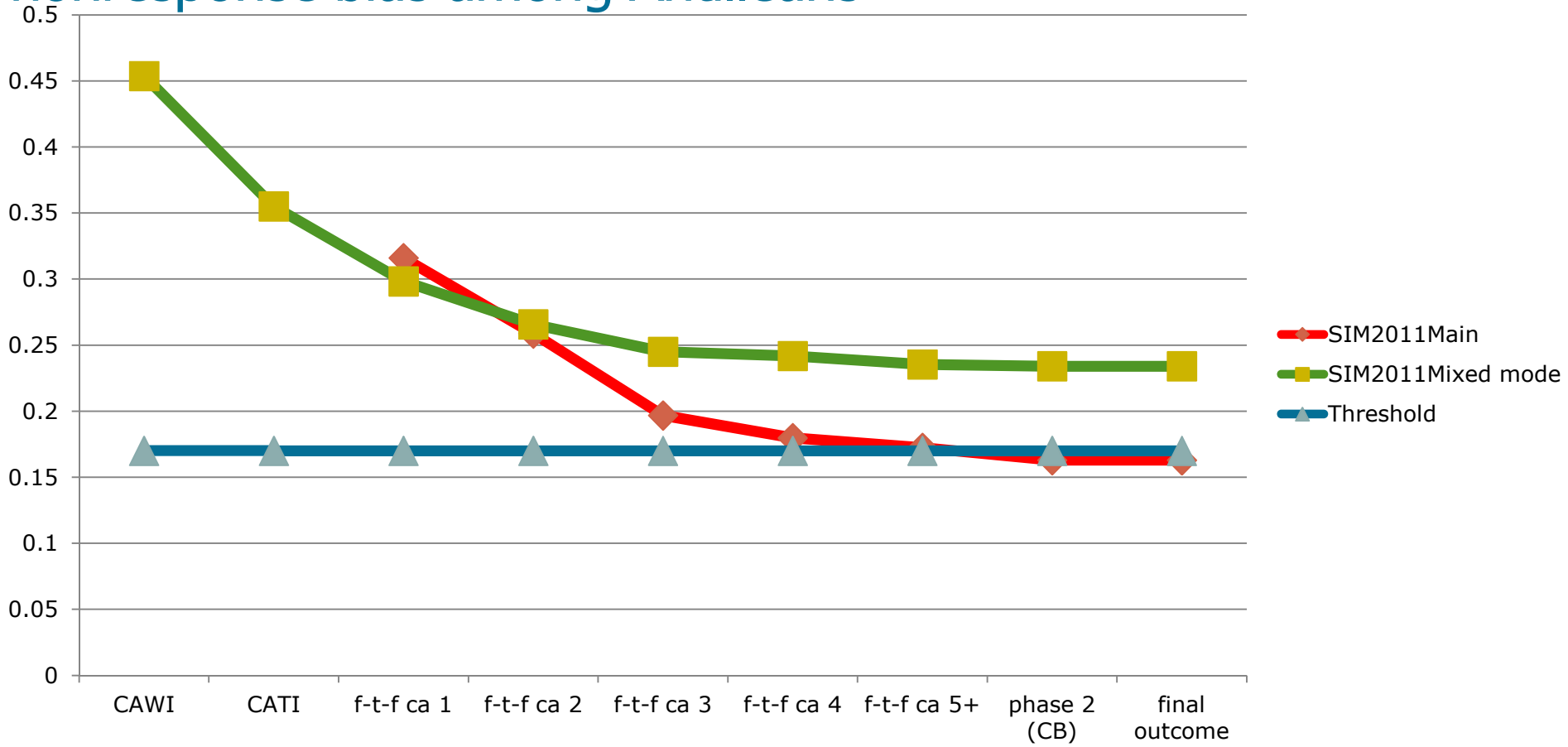
The impact of different design features on the (est.) maximum nonresponse bias among Moroccans



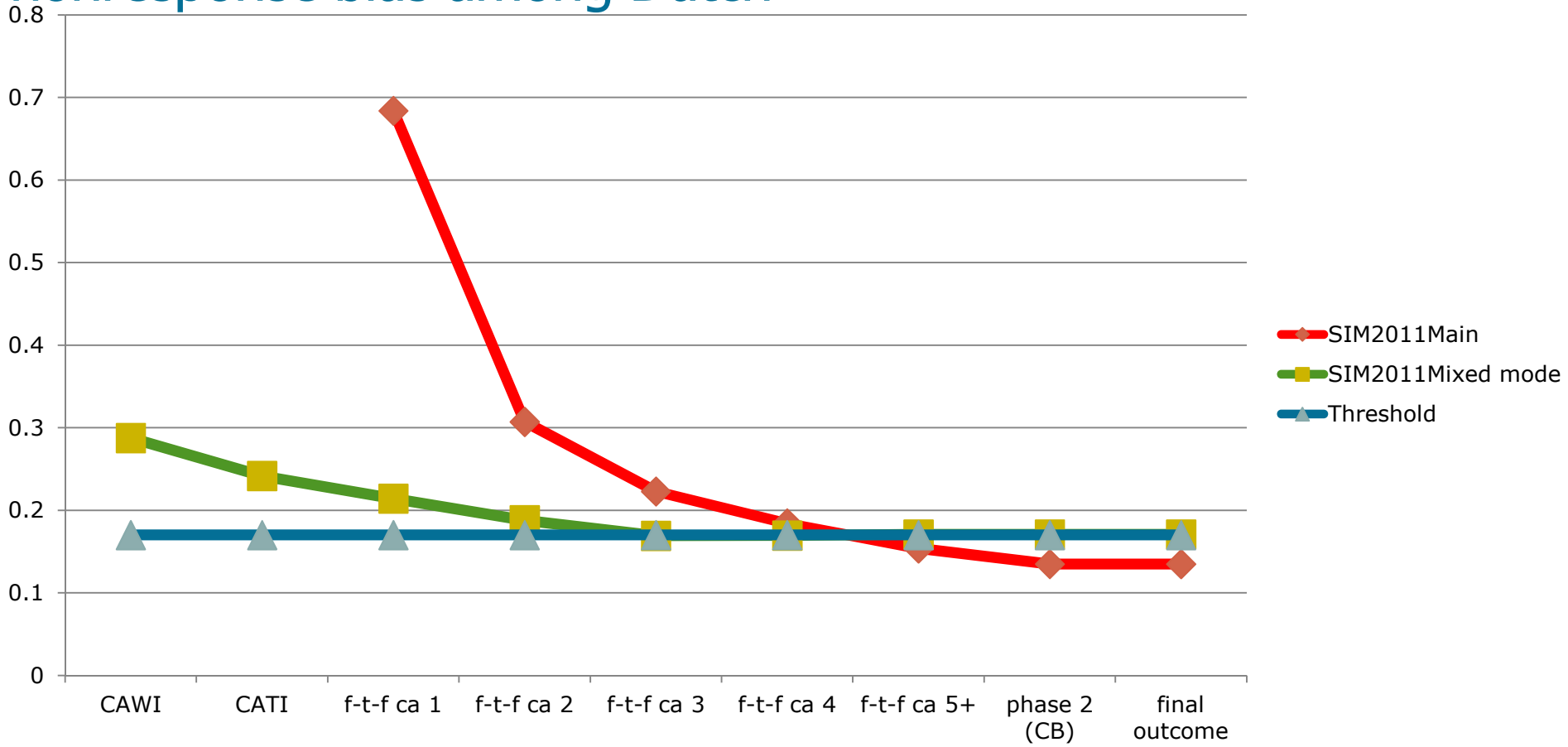
The impact of different design features on the (est.) maximum nonresponse bias among Surinamese



The impact of different design features on the (est.) maximum nonresponse bias among Antilleans



The impact of different design features on the (est.) maximum nonresponse bias among Dutch



The impact of bi-lingual interviewers on the maximum nonresponse bias among Moroccans and Turkish

- A significant portion of the Turkish and Moroccan population doesn't speak Dutch (well).

- Paradata collected to determine if respondent would have been able to participate if the interview was not offered in their native language.

  - Interviewer had to fill in a short questionnaire after the interview.
    - In what language was the interview conducted?
    - What was the level of proficiency in Dutch (estimate)?

- Estimated % of nonresponse due to language problems similar to reported nonresponse due to language problems in other surveys.

The impact of bi-lingual interviewers on the maximum nonresponse bias among Moroccans and Turkish (2)

Ethnic group	Survey	Difference in RR_1 (%) for with or without bilingual interviewer	Difference in $\hat{B}_m$ (%) for with or without bilingual interviewer
Turkish	Main	15.9	25.9
	Mixed Mode	12.4	22.0
Moroccans	Main	6.3	22.1
	Mixed Mode	4.3	14.7

The impact of bi-lingual interviewers on the maximum nonresponse bias among Moroccans and Turkish (2)

	Survey	Incl. bi-lingual int.	RR_1 (%)	$\hat{B}_m$ (%)
Turkish	SIM2011 Main	Y	52.1	18.8
		N	36.2	44.7
	SIM2011 Mixed Mode	Y	54.5	21.4
		N	42.1	43.4
Moroccans	SIM2011 Main	Y	48.0	14.9
		N	41.7	37.0
	SIM2011 Mixed Mode	Y	51.7	23.4
		N	47.4	38.1

The assumptions for the method to disentangle mode and selection effects tested

- R-indicator indicates both samples might not be equally 'representative'.

- Recommended strategies:
  - Weighting (ethnicity by sex, age, municipality size, immigration generation and marital status)
  - Checking for differences between surveys on (assumed) mode invariant variables (household size and age partner)

Results from the analyses on mode and selection effects

- Mode-effects were found, but not constant across each ethnic group. Some were expected (for example: social desirability bias on socio-cultural integration variables and religion), but also mode-effects were found on more structural variables (for example: part of the labour force).

- 'Profile' of the CAWI/CATI-response group compared to the CAPI respons group was as expected with respect to auxiliary variables (younger, more 2nd generation, more women)

- Selection-effects on substantive were found and mostly in the expected direction. For instance on education level, difficulty with the Dutch language or identification with own ethnic group.

- Selection-effects on variance differed between groups and variables.

Conclusions

- Single f-t-f mode survey results in a more 'representative' sample than the sequential mixed mode design among all groups in the study. Probably a (more elaborate) 2nd phase f-t-f CB approach in the mixed mode design is needed.
- CATI mode is not recommended among ethnic groups in the Netherlands.
- Bi-lingual interviewers and translated questionnaires remain necessary to reduce non-response due to language problems and functional illiteracy among ethnic groups.
- Bi-lingual interviewers and translated questionnaires reduce non-response bias, but they come at a measurement 'price' .
- Selection-effects are present and as expected.
- Mode-effects are a combination of several effects:(ethnicity of) the interviewer, language of the interview and translation of the questionnaire.
- Less biased answers among non-western minorities in CAWI/CATI-mode?

Results: FMI and NRB for outcome variable 'having a job' per ethnic group

	Turkish		Moroccans		Surinamese		Antilleans		Dutch	
(%)	Main	MM	Main	MM	Main	MM	Main	MM	Main	MM
NR_1	47.95	45.50	51.99	48.34	59.05	56.90	55.80	55.60	46.17	42.90
FMI	46.05	46.31	44.91	45.81	48.35	56.48	47.05	59.88	35.52	41.25
Job_cc	44.84	48.59	47.60	56.15	65.95	62.24	61.01	64.35	62.09	65.06
Job_im	46.40	42.32	49.40	55.61	69.39	58.78	60.18	66.64	64.62	62.25
NRB	-1.56	6.27	-1.80	0.54	-3.44	3.46	0.83	-2.29	-2.53	2.81
Job_w	48.97	51.65	48.39	57.48	67.12	62.50	59.94	65.36	64.42	64.05