

Using non-probability web surveys to measure sexual behaviours and attitudes in the British general population

A comparison with the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3)

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Non-probability (volunteer) web panel surveys

- Widely used in market research / opinion polling
- Potential advantage: relatively cheap and quick data collection (compared with interview surveys)
- Potential disadvantage: representativeness of results
- Susceptible to self-selection bias at two stages:
 - Volunteering to become a panel member
 - Choosing to participate in a particular survey

Experiment

- Compare results from non-probability web panel surveys with a probability sample survey of the British general population, and with external benchmarks
- Aims:
 - Can volunteer web panels provide comparable results with probability sample interview surveys?
 - Can modifying quota controls improve results?
 - Can weighting / adjustment improve results?
- Few studies that:
 - compare web panels from several organisations in GB
 - look at very sensitive (sexual) behaviour
 - compare web surveys with CASI mode

Probability survey: Third National Survey of Sexual Attitudes & Lifestyles (Natsal-3)

Natsal carried out 3 times:

- **Natsal-1** 1990, 19,000 respondents aged 16-59 years
 - **Natsal-2** 2000, 12,000 respondents aged 16-44 years
 - **Natsal-3** 2010, 15,000 respondents aged 16-74 (with young person boost) (8,969 respondents aged 18-44)
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- Probability sample survey of British general population (multi-stage, stratified and clustered)
 - Sampling frame: Postcode Address File (PAF)
 - One adult randomly selected at each eligible address
 - CAPI/CASI interview (about 1 hour)
 - Behavioural and biological measures
 - Fieldwork from September 2010 to August 2012, issued quarterly in 8 'waves'
 - First 6 papers published in *The Lancet* November 2013
 - Consortium of UCL, LSHTM and NatCen Social Research
 - Funded by MRC, Wellcome Trust, ESRC and DH

Non-probability web surveys

Four web surveys by three market research companies, each possessing a large web panel:

- 2 used ‘basic’ quota controls (age and partnership status within sex)
- 2 were ‘modified’, with additional quota controls set on variables related to key estimates
- Target sample size of 2000 per web survey

Setting the 'modified' quotas

- 1 web survey used information held on all panel members
- 1 web survey collected additional information on an omnibus survey containing a large number of panellists

	Sample type	Quotas	Achieved sample size (18-44 years)
WS-B1 Company A	Basic quota	Age-group within sex Partnership status within sex Region	2099
WS-B2 Company B	Basic quota	Age-group within sex Partnership status within sex Region	2000
WS-M1 Company B	Modified quota	Age-group within sex Partnership status within sex Region Age left full-time education Any under 18s in household	2000
WS-M2 Company C	Modified quota	Age-group within sex Partnership status within sex Frequency of drinking alcohol Age left full-time education Attitude to sex between men	2021
Natsal-3	Probability	Not applicable	8969

Research question & method (1)

Q1. How well do web surveys perform for different types of questions (CAPI v CASI, behaviour v opinions)?

M1. a) Odds ratios obtained for pre-selected variables and summarised using average 'absolute' OR (if OR is < 1 , absolute OR is $1/OR$)
b) % variables significantly different to benchmarks

Benchmarks:

- 1) Respondent characteristics: Census 2011, Integrated Household Survey (IHS), National Travel Survey (NTS)
- 2) Behaviour and attitudes: Natsal-3

Research question & method (2)

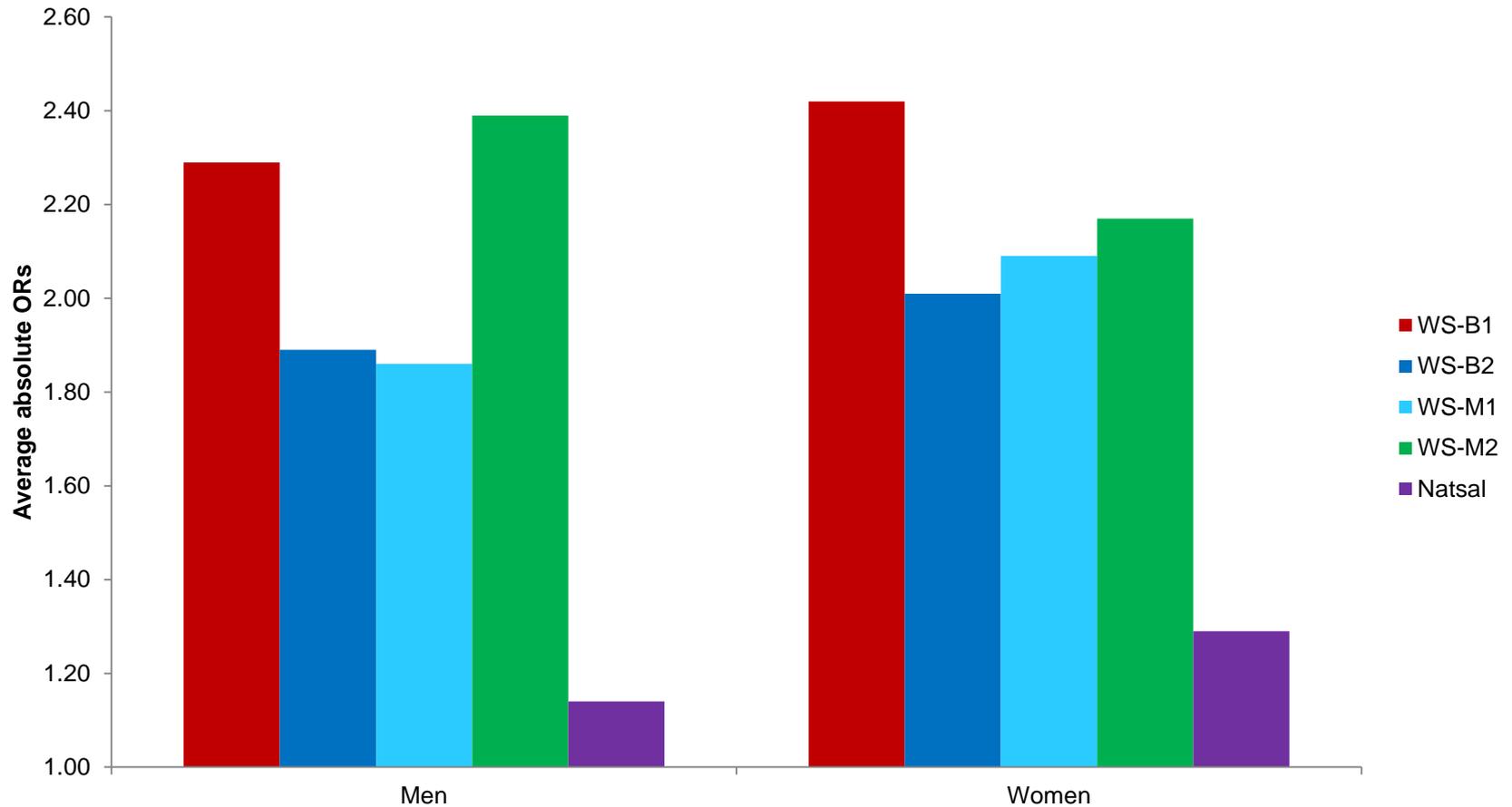
- Q2. Overall, did modified quota web surveys provide closer estimates to the reference survey (Natsal-3) than basic quota web surveys?
- M2. tests to assess whether either modified quota web survey performed better than the basic quota web surveys combined

Research question & method (3)

- Q3. How consistent are the results between basic quota web surveys?
- M3. Generalised estimating equations used to assess consistency

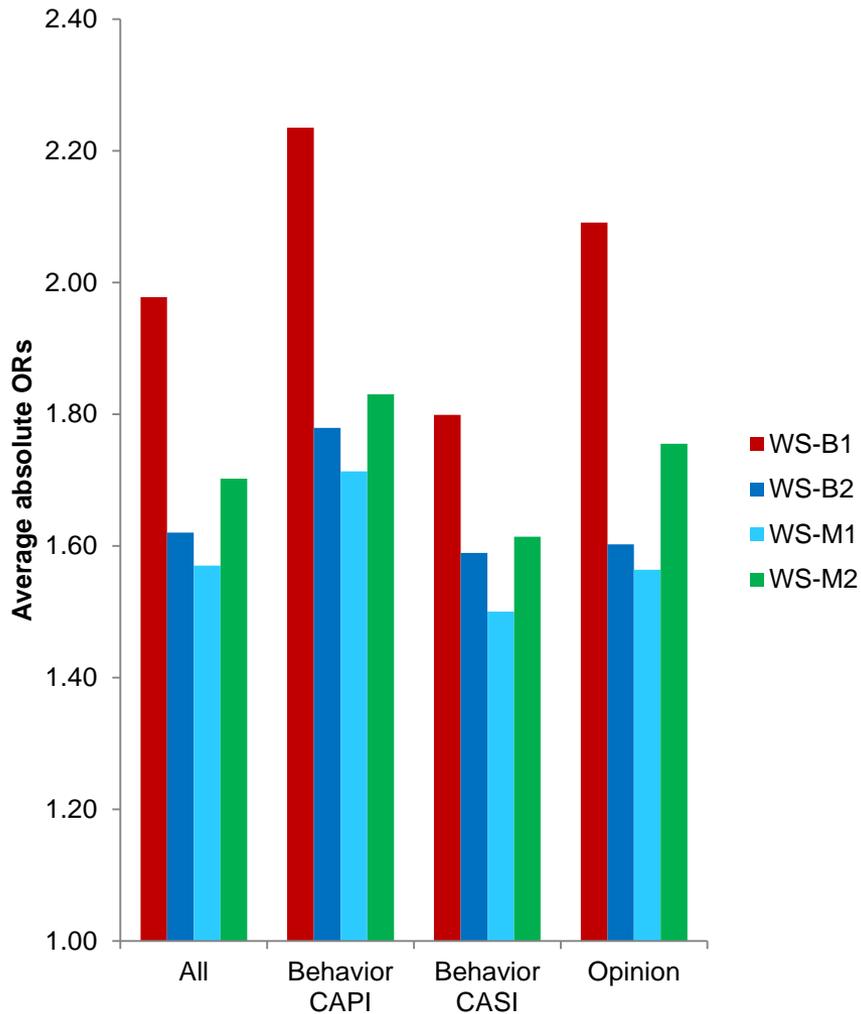
Results (1)

Summary of average absolute ORs for respondent characteristics for men and women: four web surveys and Natsal-3 compared with external benchmarks

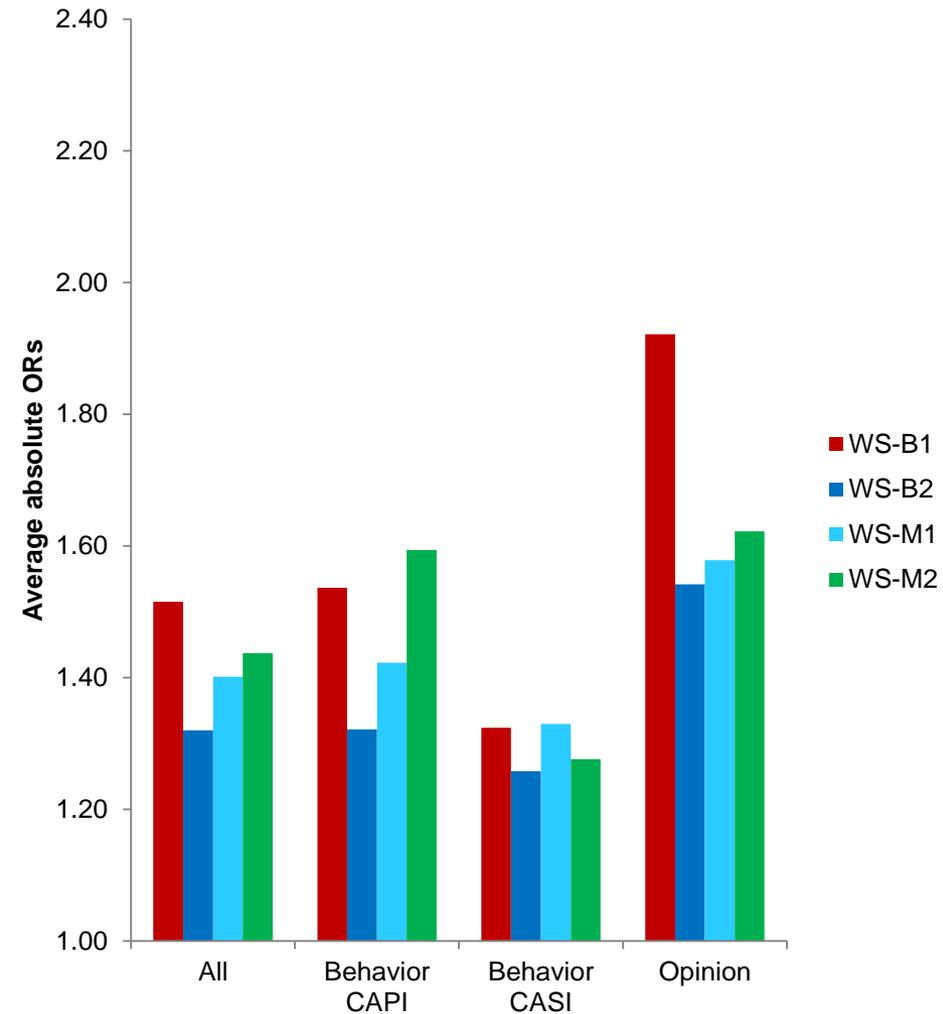


Summary of average absolute ORs for behaviour (CAPI and CASI) and opinion variables for men and women: four web surveys compared with Natsal-3

Men

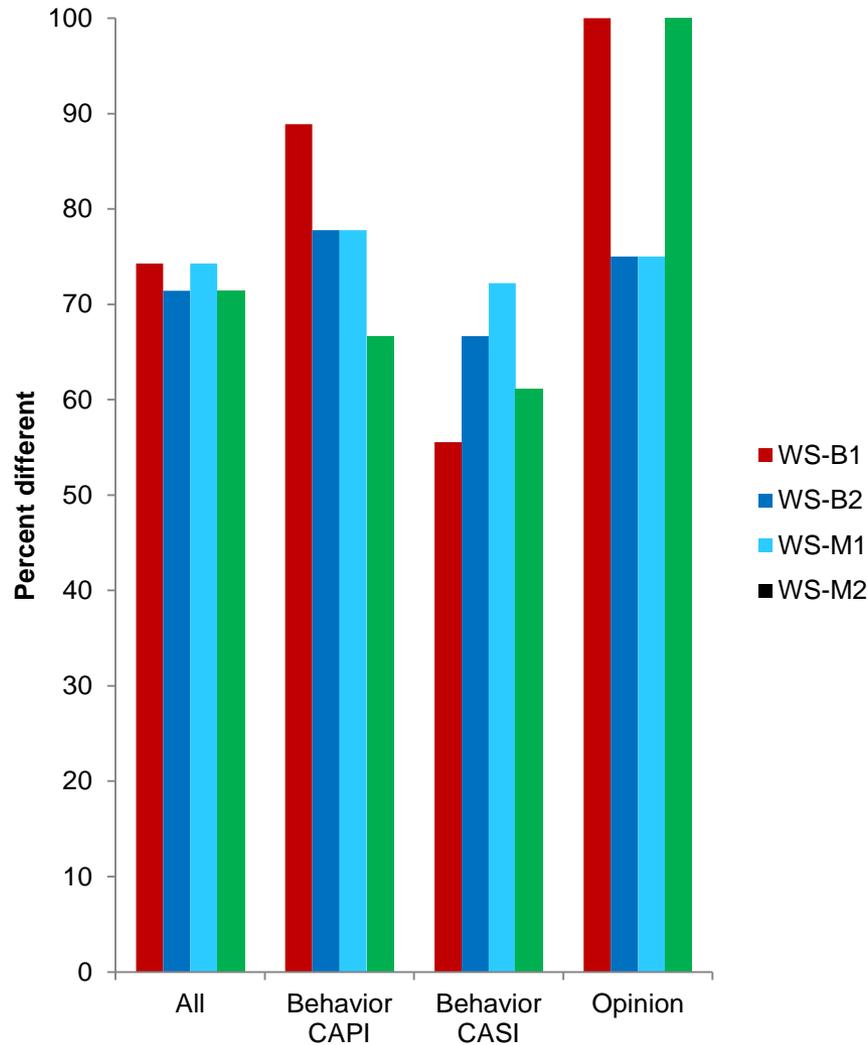


Women

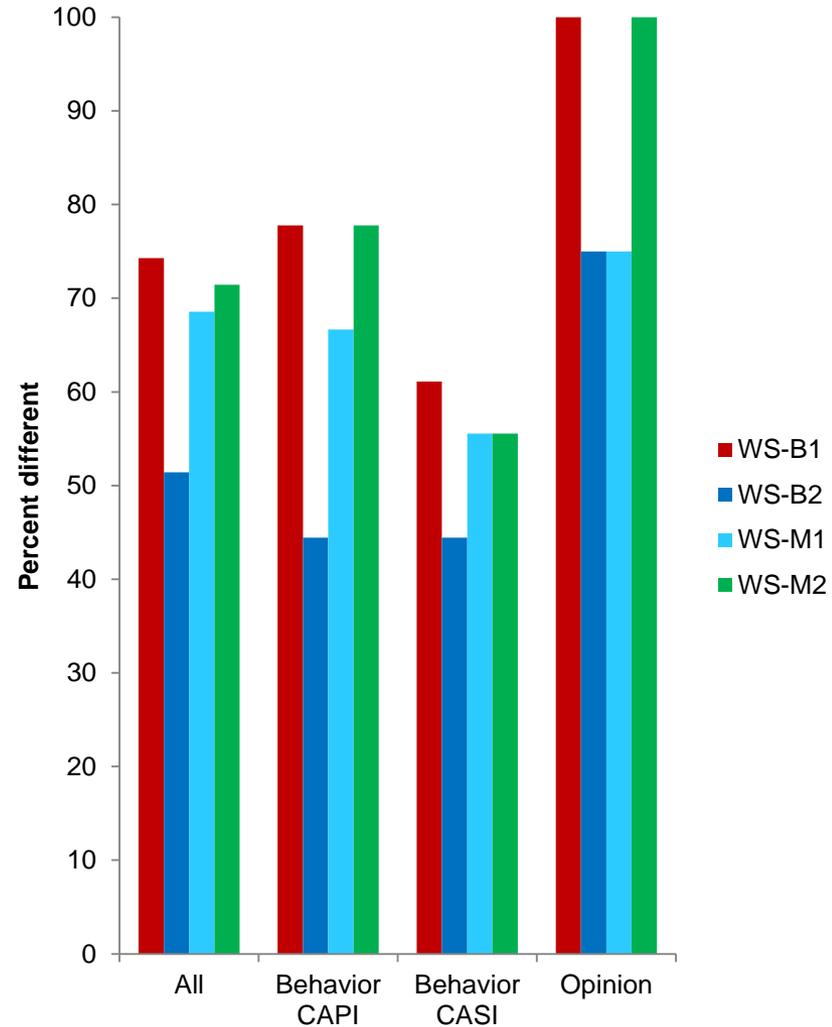


Percentage of variables in four web surveys significantly different from Natsal-3, for men and women ($p < 0.05$)

Men



Women



Results (2): Modified quota v basic quota web surveys

- For males, modified quota web surveys performed better overall than basic quota web surveys
- For females, modified quotas did not significantly improve results relative to basic quotas (perhaps because estimates were closer for females to begin with)

Results (3): Consistency between basic quota web surveys

- The GEE outcomes highlighted significant differences between the two surveys using basic quotas for both men and women ($p < 0.001$)

Conclusions (1)

- Compared with external benchmarks, non-probability web surveys less accurately represent respondent characteristics than a probability sample interview survey
- Differences between Natsal-3 and the web surveys were very large for some estimates (eg, same sex experience)
- Differences between Natsal-3 and web survey estimates were greater for questions asked in CAPI than in CASI
- There was no consistent pattern in whether reports of sensitive behaviours were higher in Natsal-3 CASI or in the web surveys
- Differences between volunteer web surveys and Natsal-3 CASI estimates suggest selection biases are present in web surveys

Conclusions (2)

- Adding additional quota controls to the web surveys did not lead to consistent improvements in estimates
- No one web survey performed consistently better than any other across gender, CAPI/CASI or question type
- Inconsistencies between web surveys suggest estimates depend on the panel (and quota procedures) used
- Surveys using volunteer web panels do not appear appropriate for obtaining scientifically robust population estimates
- Next stage is to assess whether propensity score weighting can improve web survey estimates

J Med Internet Res 2014;16(12):e276 doi:10.2196/jmir3382

Thank you

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