Benefits of biodiversity protection: Comparing in-person and internet CV survey modes

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Motivation

- Preferences constructed, not there to be uncovered → sensitive to data ”collection” process
- Traditionally higher emphasis in SP papers on econometric innovation than ensuring data quality
- Use of internet is growing fast in SP surveys

→ How does the internet survey mode compare to a standard in-person interview mode in CV?

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Sources of survey mode differences

- **Sampling:** method, non-response, pop coverage

- **Questionnaire delivery – ”survey mode effect”:**
  Two main sources identified in survey literature:
  - Normative & sociological → social desirability bias
  - Cognitive & psychological → satisficing strategies

- Internet & interviews expected to affect responses differently along the two sources of mode effects

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Comparisons of web vs other modes

Source	Mean WTP comparison	Good valued	Method
Nielsen (in press)	Web = face-to-face	Air pollution	CE
Covey et al. (2010)	Web ~ face-to-face	Rail safety	Other
Canavari et al (2005)	Web > face-to-face	Organic fruit	CV
Marta-P. et al (2007)	Web < face-to-face	Landscapes	CV
USEPA (2009)	Web = mail < phone	Air pollution	CV
MacDonald et al (2010)	Web ≠ mail	Water quality	CE
Olsen (2009)	Web = mail	Landscapes	CE
Dickie et al. (2007)	Web vs PC at location	Skin cancer risk	CV
Li et al. (2004)	Web = phone	Kyoto Protocol	CV

Source: Adapted from Nielsen (in press)

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Objectives of paper

- Gaps in existing literature:
  - Mixing sample effects with mode effects
  - Lack of control also with other factors that vary between samples (e.g. survey at different times)
- Objectives:
  - Try better to isolate mode effects in the comparison
  - Probe into reasons for observed effects

Main hypotheses

(I) Satisficing & social desirability effects

H1 (satisficing):

- Share of “Don’t know” responses to the WTP question is *higher* for the Internet sample

H2 (satisficing):

- The distribution of payment card responses has *lower* variance for the Internet sample

H3 (social desirability):

- The share of stated zero WTP is *higher* in the Internet sample

H4 (social desirability):

- The share of zero respondents that state reasons of protest is *higher* in the Internet sample

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Main hypotheses (cont.)

(II) Mean WTP and Construct validity

H5a (classic null of no difference):

- Mean WTP is *equal* between the Internet and in-person interview samples.

H5b (non-equivalence of WTP):

- Mean WTP for the Internet sample is either *higher* or *lower* than for the in-person interview sample by 20 percent or more.

H6 (conformity of data with expectations):

- The relationship between WTP and commonly included explanatory variables is similar between modes in regressions.

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Research design

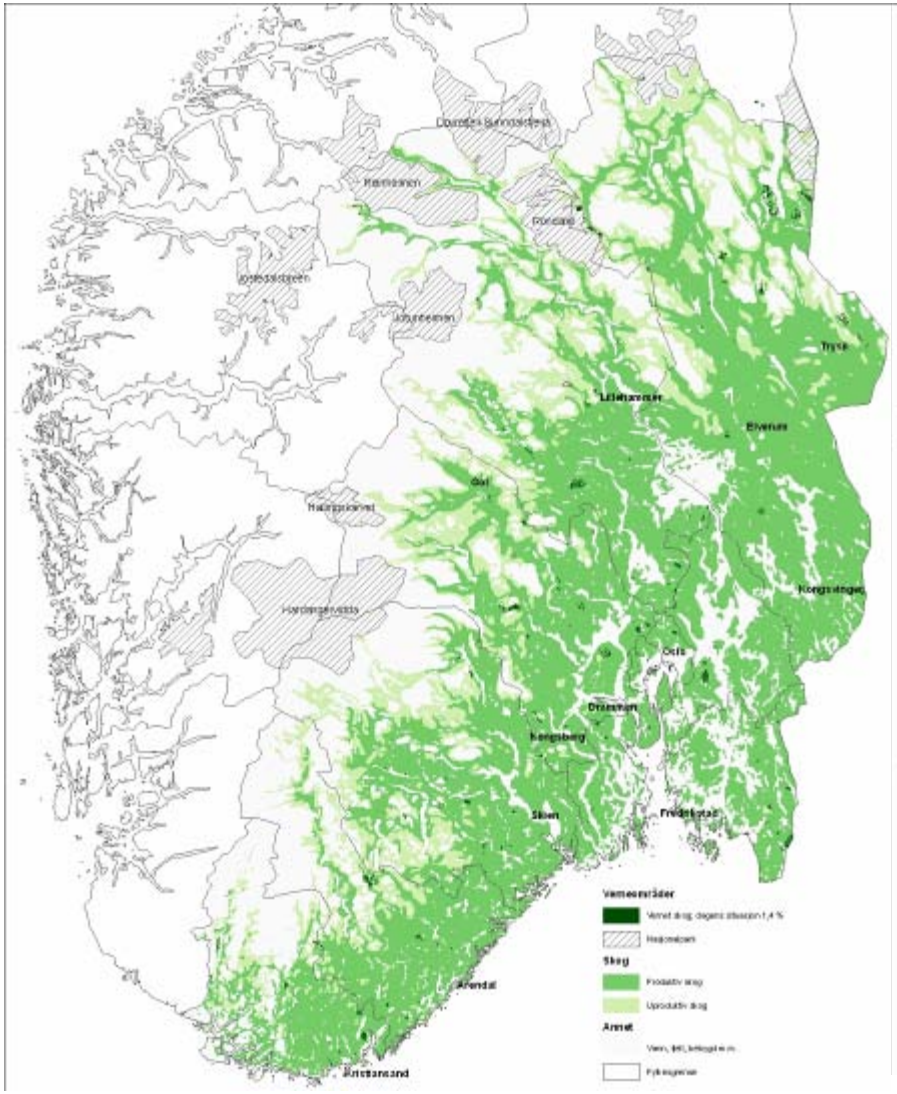
- Fairly standard CV survey, though comprehensive
- Value of forest reserve plans for biodiversity
- Identical questionnaires in both modes
  - Info, questions and pics presented as similarly as practically possible
- Payment card WTP questions for 2 protection plans
- Randomly recruited panel of 35,000 respondents, maintained by survey firm TNS Gallup

Research design (2)

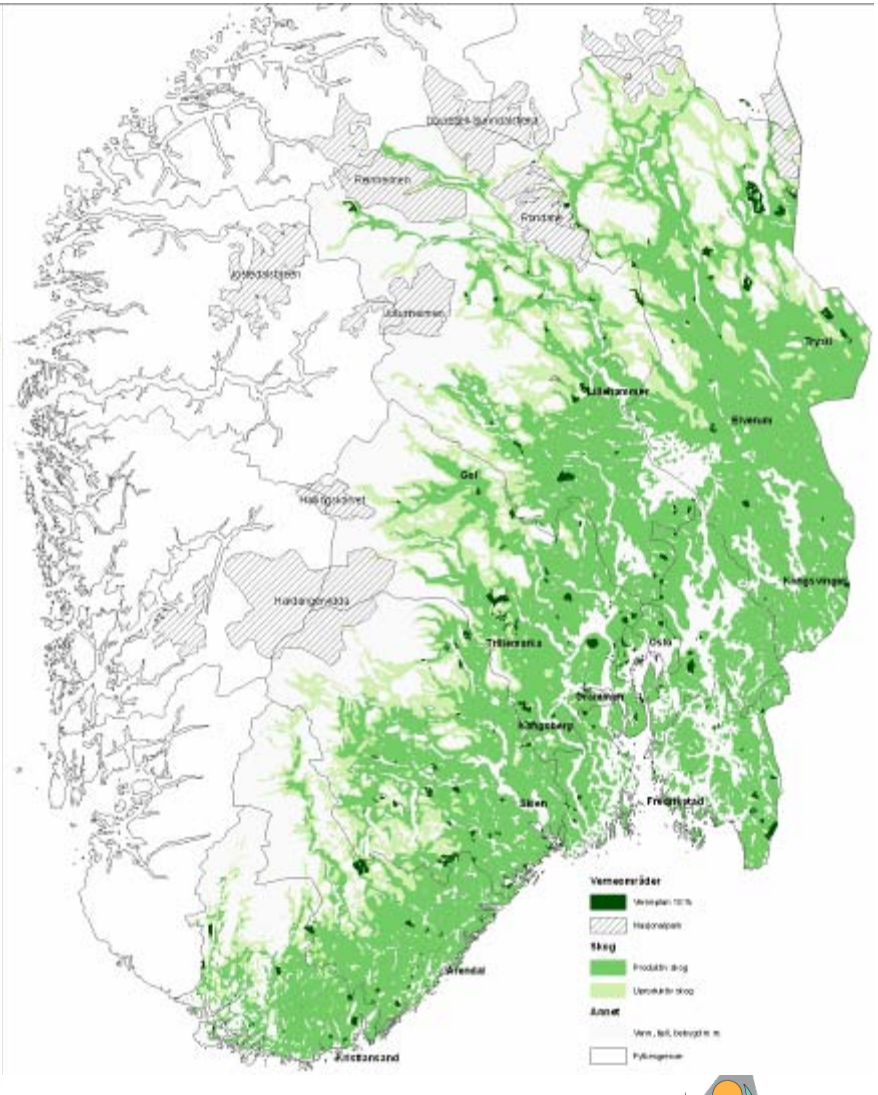
	Internet sample	In-person sample
Mode	Web	In-home CAPI
Population	Oslo, > 15 years	Oslo, > 15 years
Sample frame	Gallup access panel	Gallup access panel
Sampling	Quota (age, edu, sex)	Quota (age, edu, sex)
Recruitment	E-mail **with survey link**	E-mail **+ called for appointm**
Gross sample size	645	398
Time of survey	Oct – Nov 2007	Oct – Nov 2007
Remuneration	Token	Token

PHOTOS OF “RED LIST” SPECIES INCL WITH CV SURVEY

WTP for alternative forest reserve plans



1.4% protection (today)



2,8 % protection (doubling)

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Open-ended WTP question

”Now we ask you to consider how much the two alternative plans are worth for your household. Think carefully through how much the 2.8% plan is worth compared to the current situation, before you give your final answer to the next question. Try to consider what would be a realistic annual amount given the budget of your household. Your household must choose whether to spend the amount on the forest conservation plan, or on other things.”

WTP question: ”What is the most your household almost certainly is willing to pay in an additional annual tax earmarked to a public fund for increased forest conservation from today’s level of 1.4% to 2.8% of the productive forest area? Choose the highest amount, if anything, your household almost certainly will pay”.

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Response rates and samples

- Response rates (final stage)
  - Internet: 60%
  - In-person interviews: 75%
- No significant differences between net samples in
  - Average income, education, age, gender
  - Frequency of internet use
- No signs of self-selection of respondents along observable characteristics

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Results: Hypotheses 1-4

Hypotheses: Satisficing & Social desirability		Indicator values for each sample		Mode comparison	
		Interview (n=300)	Internet (n=385)	Test statistic	Result (p<0.1)
H1	Share of "don't knows" *higher* on web	8.0%	11.1%	t = 1.38	**Rejected**
H2	WTP variance *lower* on web	σ = .978	σ = 1.26	χ^2 =14.27[a]	**Rejected**
H3	Share zero responses *higher* on web	19.3%	18.9%	t = -0.12	**Rejected**
H4	Share protest responses *higher* on web				
	- Standard protest classification	90.65%	88.06%	t = -0.64	**Rejected**
	- Strict protest classification	74.77%	70.90%	t = -0.66	**Rejected**

No evidence for social desirability bias and lower level of satisficing in the in-person interviews

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Results: Mean WTP comparison

Comparison of mean WTP / hh / year **for first WTP question** between modes (in NOK). 1 NOK = 0.16 US $

Hypothesis	**Interview: (n=218)**	**Internet: (n=269)**	**Comparison result (p<0.1)**
H5a Equality of mean WTP	1819 (1539, 2100)[a]	1566 (1261, 1871)[a]	Non-rejection

Notes:
-Estimated using interval regression in STATA 9.2.
-a: 95% confidence intervals calculated using 10000 bootstrap draws with replacement, following Efron (1997).
- Zeros removed

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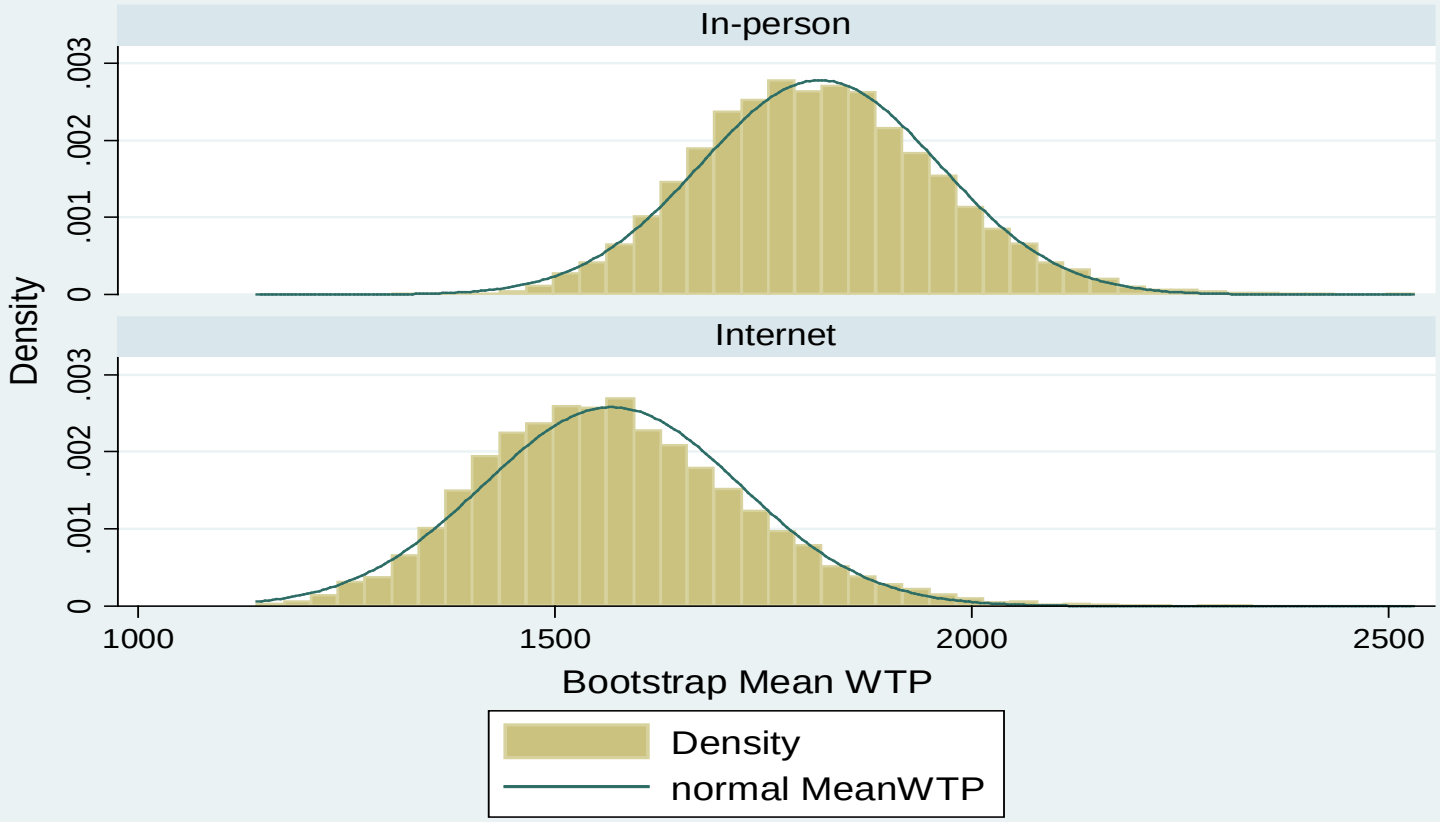
Results: Mean WTP comparison (2)

Distribution of bootstrapped mean WTP from the two samples (10000 draws)



Results – Last hypotheses

- H5b (non-equivalence of WTP):
  - *Cannot* reject difference > than ± 20%
  - *Can* reject difference > than ± 30% ($p<0.08$)
- H6 (conformity of data with expectations):
  - WTP varies in expected ways within both samples
  - No marked differences in significance or signs
- Both samples pass internal scope tests

Conclusions

- Our study is better able to separate *mode effects* from *sample effects*, since both samples are drawn from *same* panel
- No clear signs of:
  - Social desirability bias in interviews
  - Satisficing strategies in internet survey
  - Other differences in data quality, e.g. degree of validity

→ Quite encouraging for websurveys

Caveats and cautions

- We could have weighted the sample with observable respondent characteristics
- Self-selection effects left from recruitment process unrelated to observable characteristics?
- **Careful in generalizing:**
  - Complex, non-use good, may not extend to CE
  - Cultural issues matter, e.g. ”polite” not to disagree
  - Are webpanelists really representative of wider population or are they ”survey experts”?

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Thank you

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