

# Exploring citizens' views of climate solutions in their own words

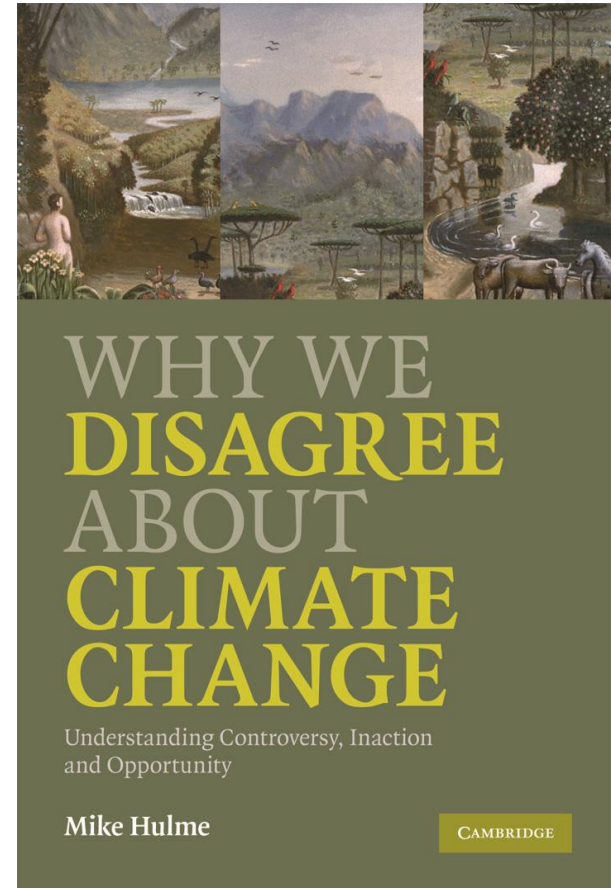
Endre Tvinnereim  
Uni Research Rokkan Center  
LINGCLIM conference, Bergen,  
16 October 2015

# Research questions

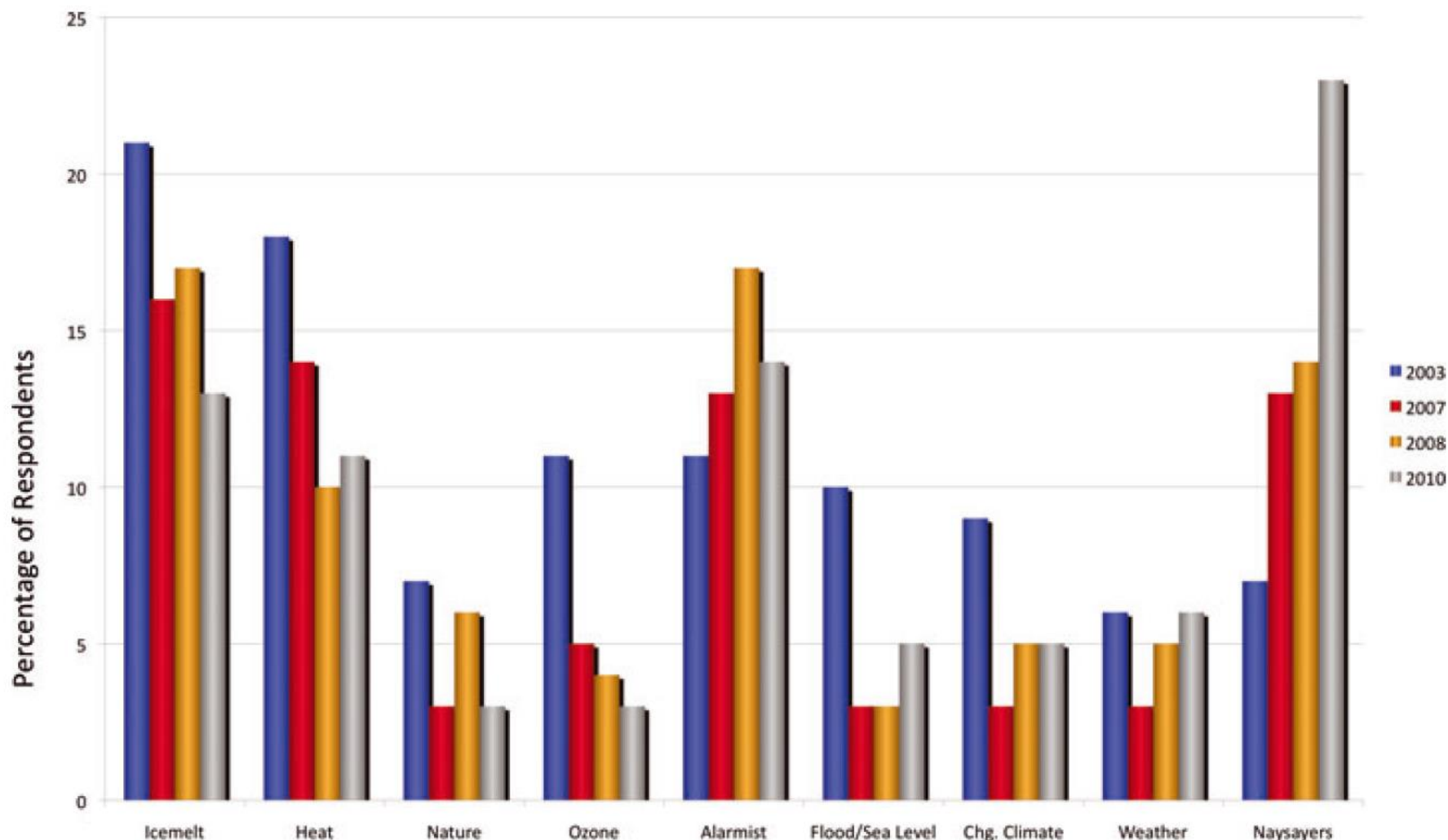
- What do Norwegians associate with climate change? Are these associations predictable?  
(Tvinnereim & Fløttum, 2015, *Nature Climate Change*)
- What do Norwegians think should be done about climate change?
- Do Chinese citizens distinguish between “climate change” and “air pollution”?

# What do people think about climate change, in their own words?

- Limitations to closed questions
  - Complex, potentially un-formed (Stoneman 2012)
  - What is important to you?
- Before: costly and difficult to use open-ended questions
- Now: Online surveys + quantitative text analysis



# US open-ended: Manual coding

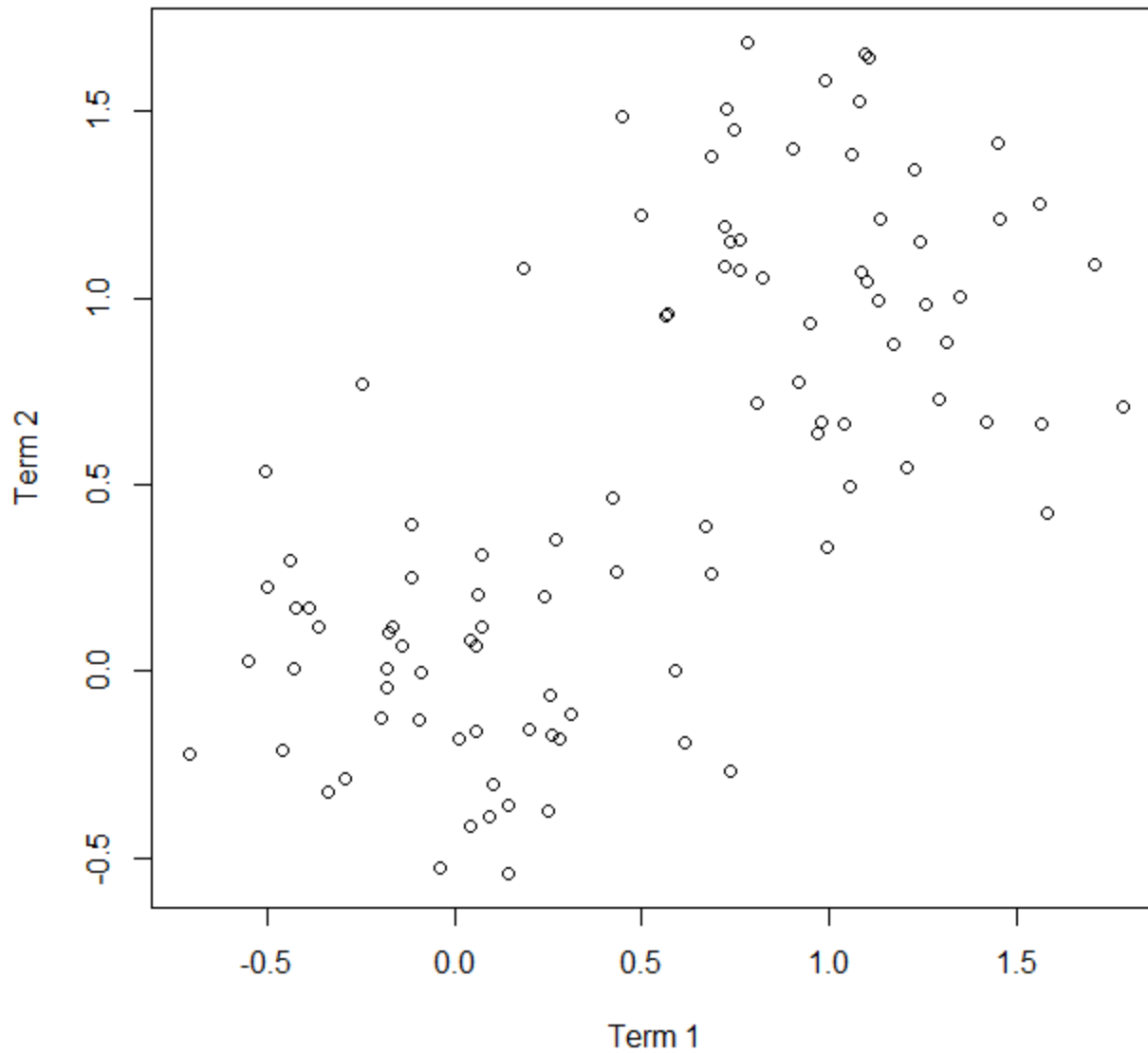


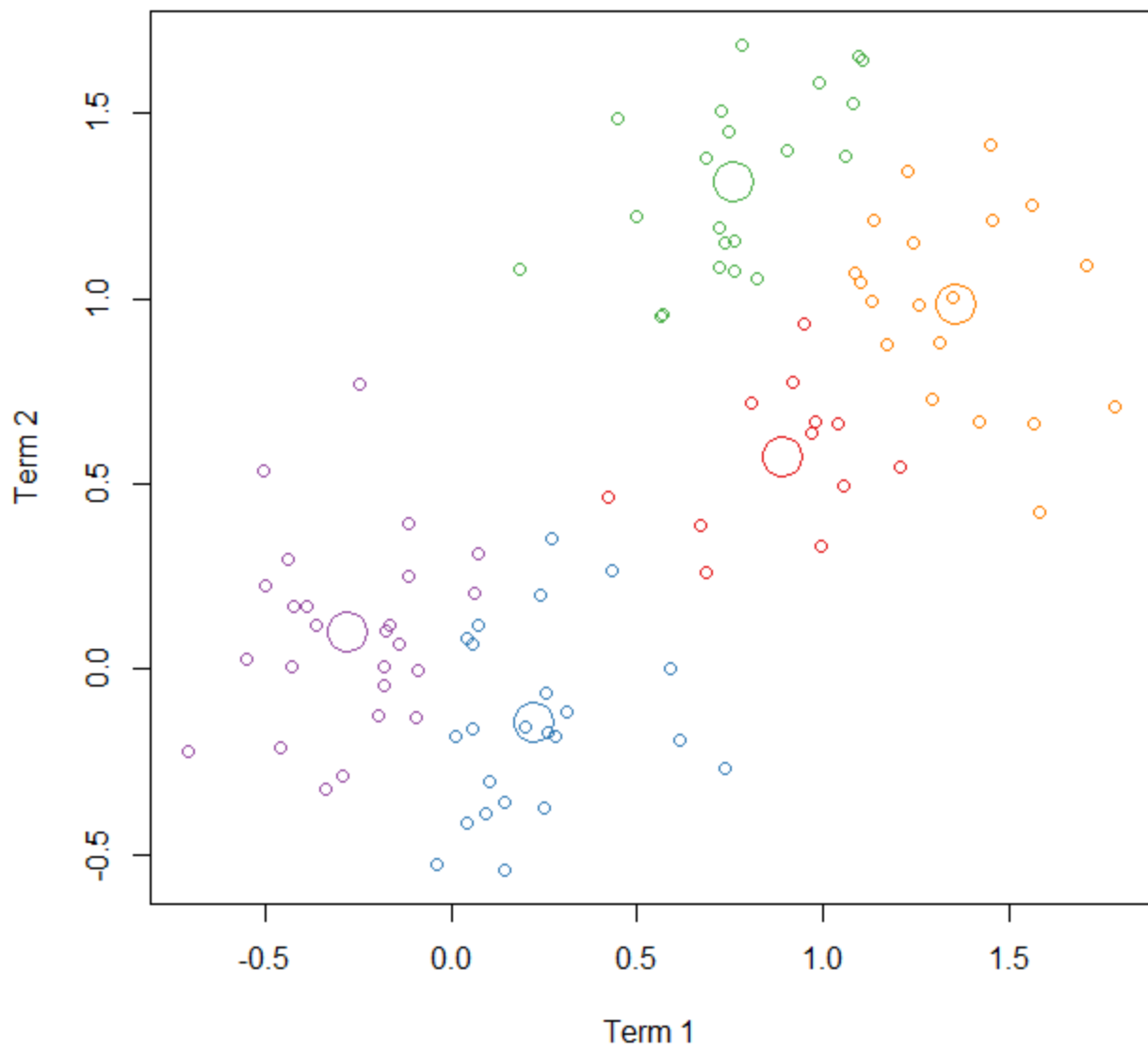
# Open-ended question

What comes to mind when you hear the words “climate change”? Please note the first thing you think of. We appreciate all kinds of answers.

(Norwegian Citizen Panel, Round 1, 2013)

*Original: Hva tenker du når du hører eller leser ordet 'klimaendringer'? Vennligst skriv ned det første du kommer på. Vi ønsker alle typer svar.*



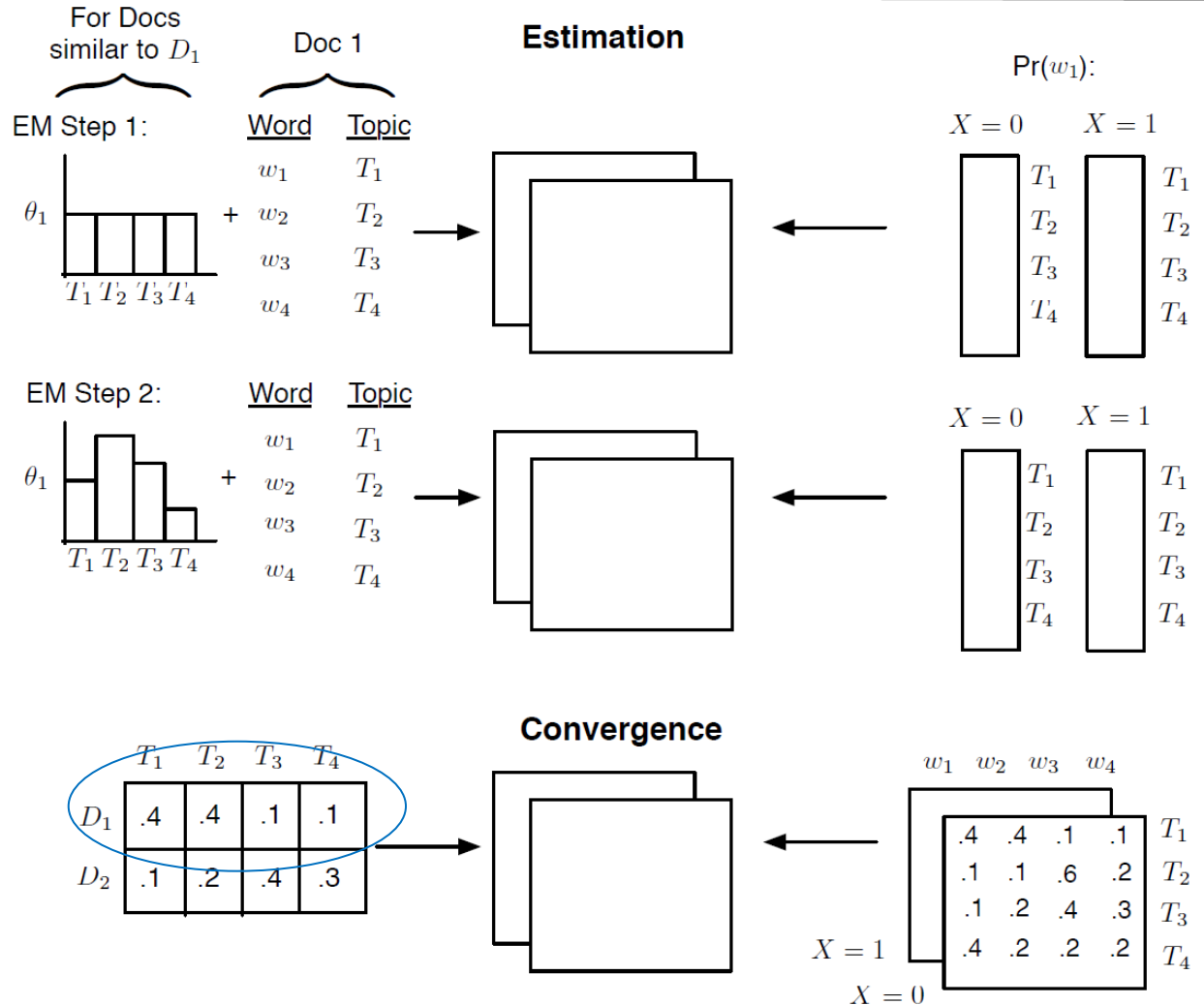
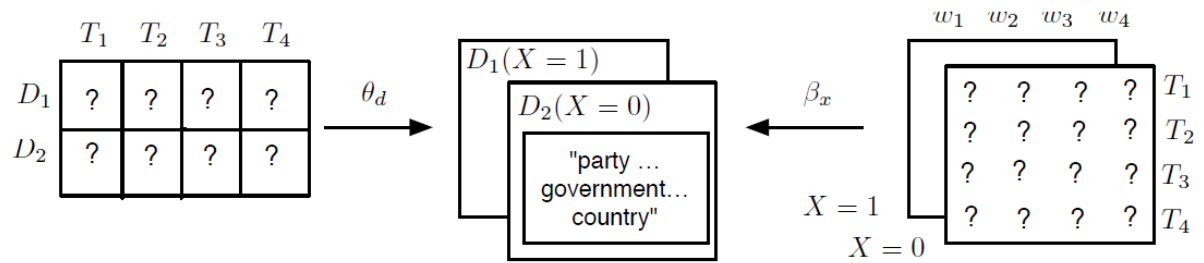


# STM estimation

(Roberts et al., 2014)

D=document  
 T=topic  
 w=word/term  
 X=co-variate

Multiple membership





# Most discriminating terms

Topic no.	Most discriminating terms (frequency and exclusivity): <i>Norwegian</i> and <i>English</i>	Topic label	Topic share
1	<i>forbruk, peng*, hjelp, mest, mennesk, tror, tenk, litt, land, alt</i> consumption, money, help, most, human*, believe, think, little, land, everything	Money/ consumption	.18
2	<i>vær, ekstremvær, smelt*, temperatur, naturkatastrof, global, uvær, flom, stig</i> weather, extreme weather, melt*, temperature, natural disaster, global, bad weather, flood, rise	Weather/ ice	.45
3	<i>endr*, klima, syklus, jord, forhold, påvirk*, forurens*, all, menneskeskapt, endring</i> change, climate, cycle, earth, compare/condition, affect, pollut*, all/every, human-made, change	Attribution	.15
4	<i>fremtid, alvor*, gjør, far*, verd, folk, ansv*, bil, barn, konsekvs</i> future, serious*, do, danger*, world, people, responsib*, car, child, consequence	Future/ impact	.22

# Most representative responses 2+3

## Topic 2: Weather/ Ice

- [ 1] More rain, storms and bad weather, higher sea level, extreme drought, e
- [ 2] Ocean rising, temperature in ocean and air increasing, more unstable w
- [ 3] More bad weather such as precipitation, storms, etc. as well as melting
- [ 4] More extreme weather. Warmer or colder . . . , floods, bad weather etc.

## Topic 3: Attribution

- [ 1] The climate has been changing several times in the course of the past k by humans, or not at all. Besides, high levels of CO<sub>2</sub> emissions are good for of CO<sub>2</sub> in the air.
- [ 3] That this is something we in no way may influence to any great extent. N by the solar system.
- [ 6] Climate change: the sum of human-made and natural changes that affe
- [ 10] The climate has always been changing and it still is. Now it's changing

# Most representative responses 4

## Topic 4: Future/ Impact

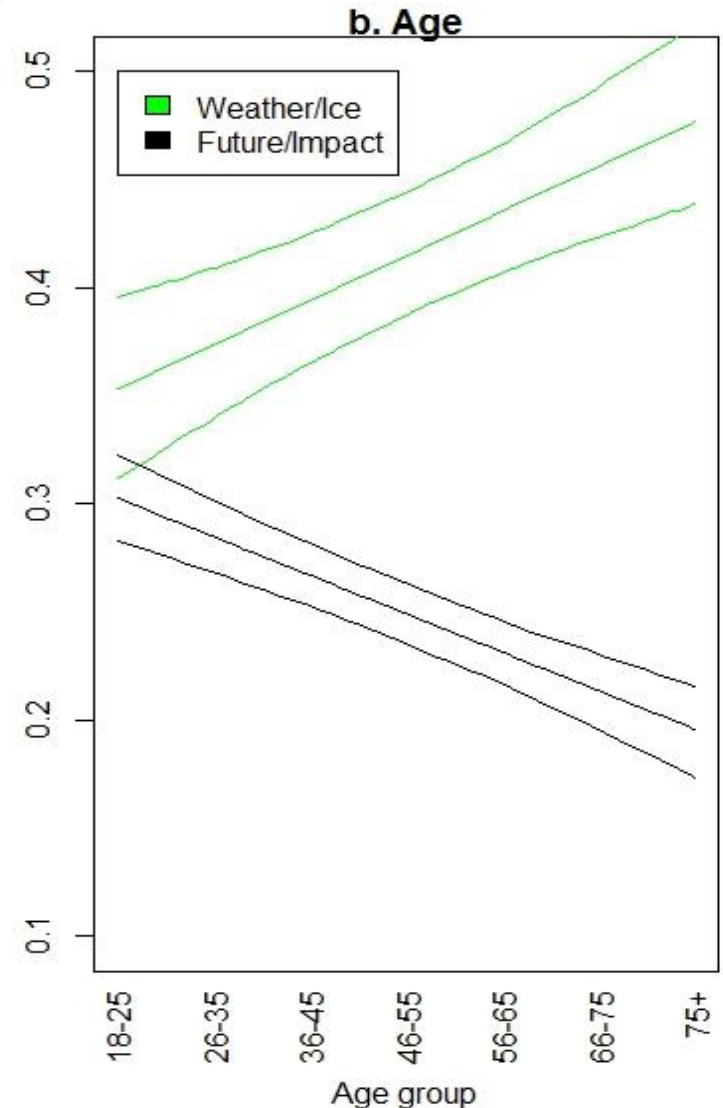
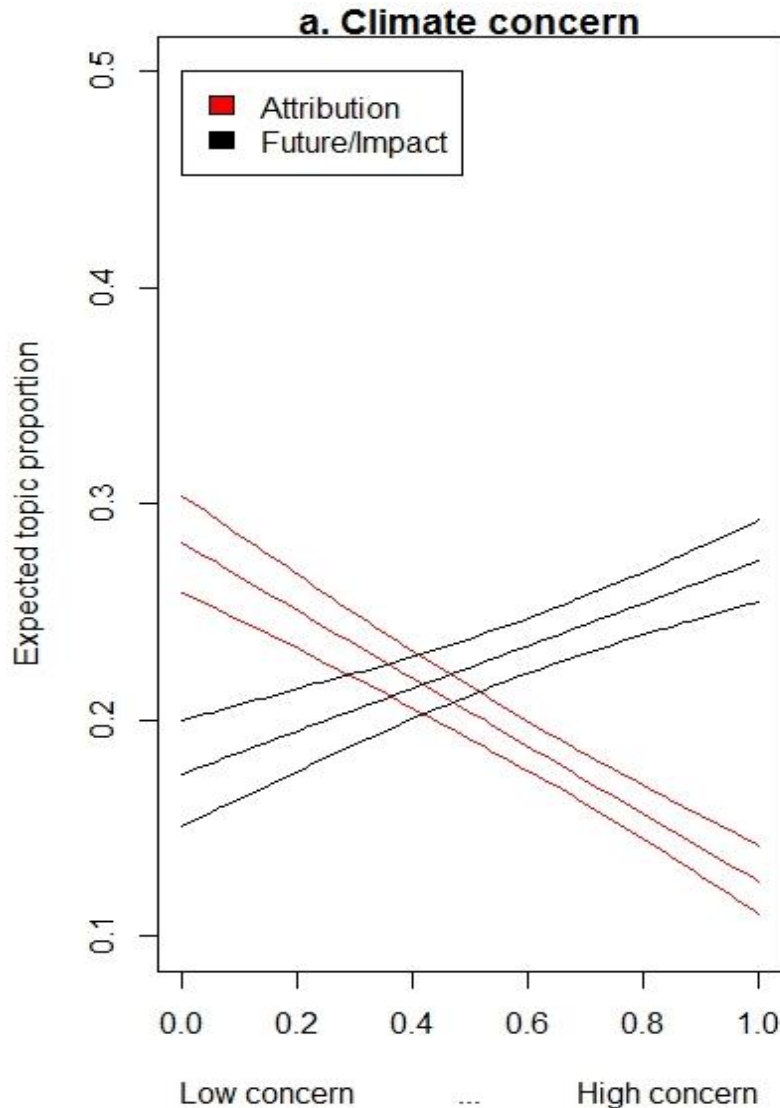
[2] That a lot needs to be done to reduce emissions in China, India and Asia and the rest of the world; we need not only words but action against

[4] Climate change is very serious for people around the whole globe. So be one of the reasons why we don't seem to be willing to do what's needed the problems that our children and not least grandchildren and future generations 'governing generations' aren't able to or lack the courage to take the unpopular of the wheels'. That would entail a long transition period to truly ecological necessary lowering of living standards in our rich part of the world. Their important and decisive voice, since they, in any event, will be the ones who

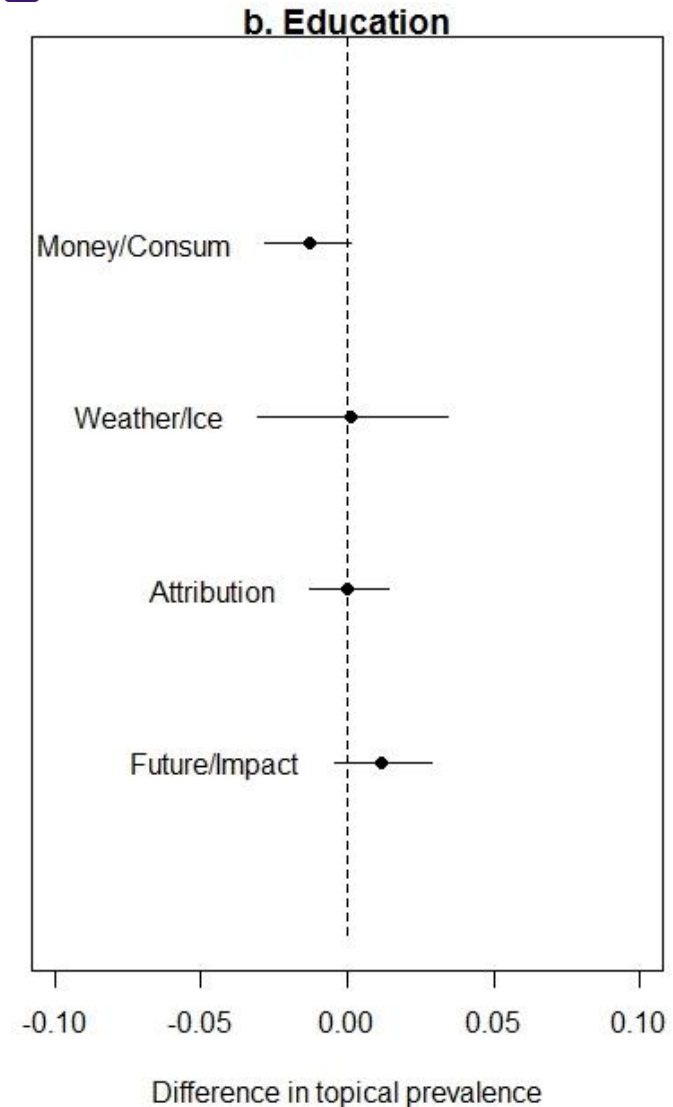
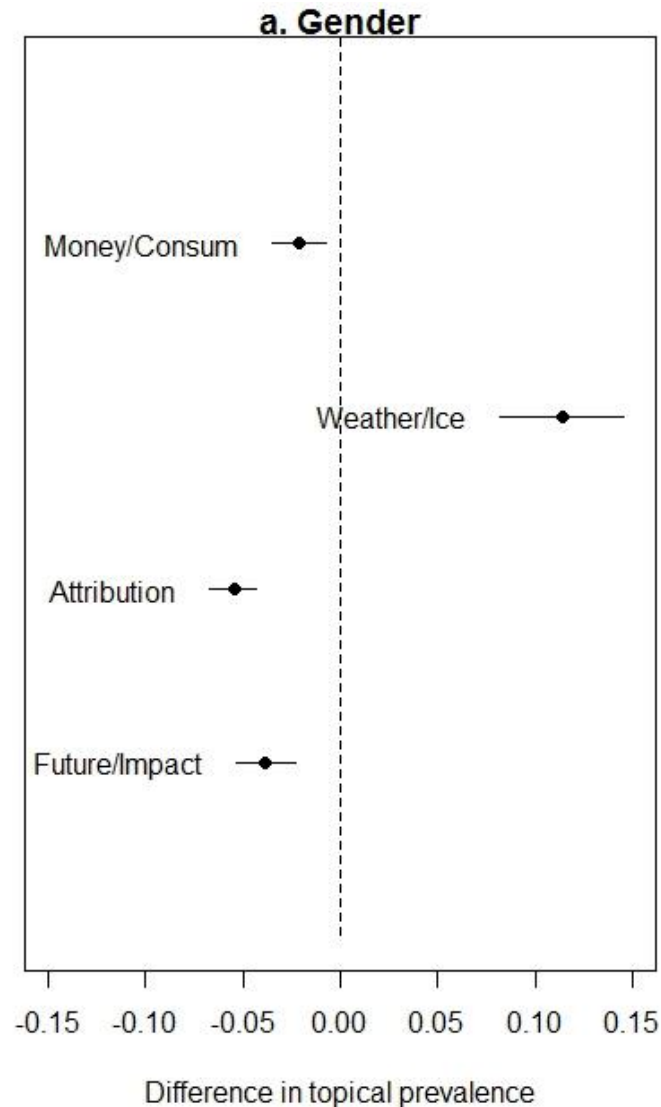
[5] That people no longer take it seriously because nothing is being done low priority to climate change, which in turn may be because little is being egocentric on behalf of their nation. They are tired of hearing about problems

[7] Our grandchildren will condemn our generation for not doing what

# Co-variation with background variables



# Co-variation with background variables



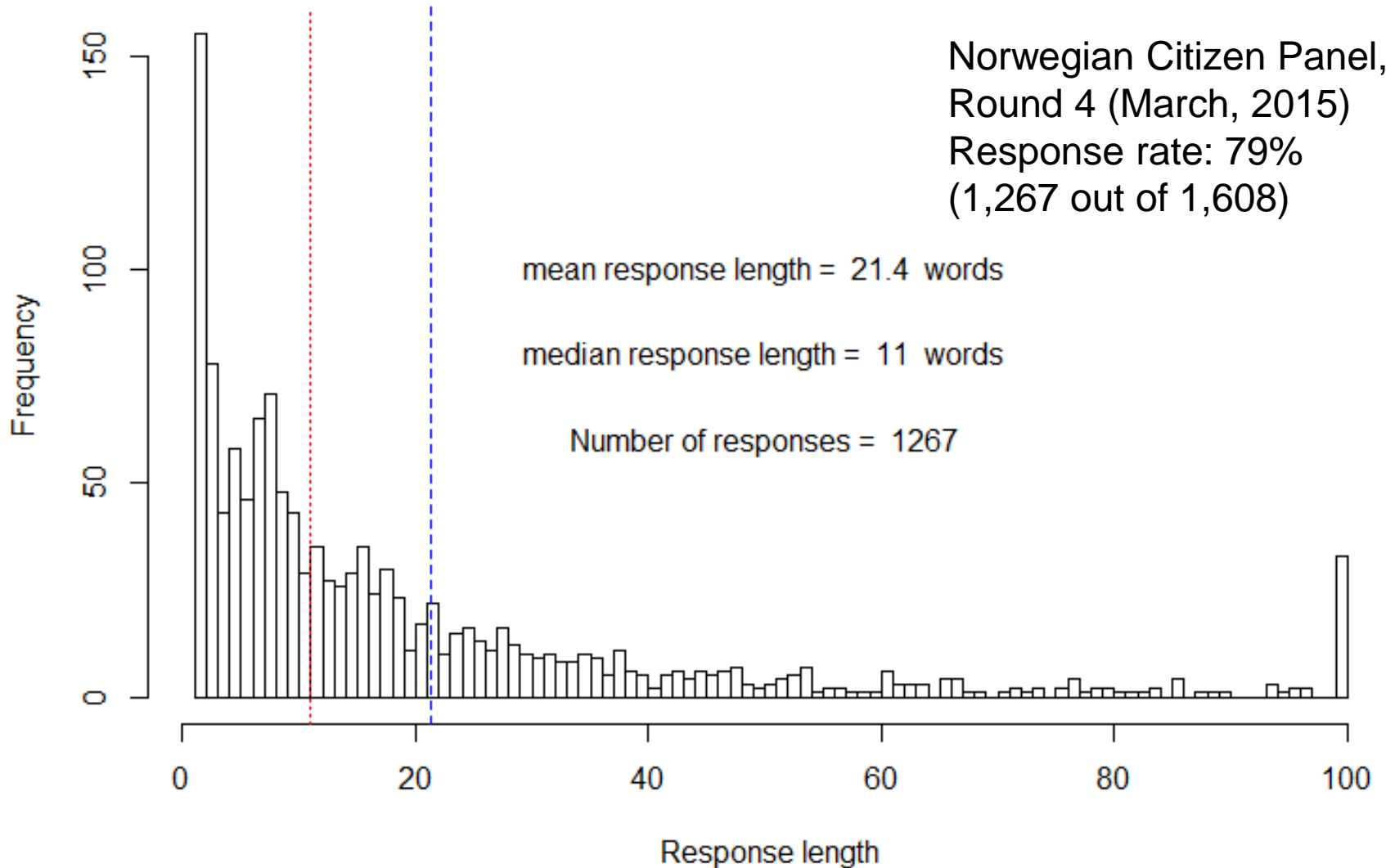
# Climate change: What should be done?

**When it comes to climate change, what do you think should be done?** Please write down the first thing that comes to mind. We appreciate all kinds of answers – a few sentences or just a few words if you prefer.

(Norwegian citizen panel, Round 1, 2013)

***Når det gjelder klimaendringer, hva mener du bør gjøres? Vennligst skriv ned det første du kommer på. Vi ønsker alle typer svar, gjerne et par setninger, eller bare noen få ord om det passer bedre for deg.***

# Responses: basic statistics



# Word frequencies

Count	Term	Translation
320	<i>mer</i>	<b>more</b>
313	<i>utslipp</i>	<b>emissions</b>
292	<i>reduser</i>	<b>reduce</b>
194	<i>bruk</i>	<b>use</b>
174	<i>mindr</i>	<b>less</b>
167	<i>gjør</i>	<b>do</b>
159	<i>land</i>	<b>country</b>
156	<i>energi</i>	<b>energy</b>
153	<i>bil</i>	<b>car</b>
122	<i>bør</i>	<b>should</b>
119	<i>forbruk</i>	<b>consumption</b>
117	<i>stor</i>	<b>big</b>
112	<i>mye</i>	<b>much</b>
106	<i>norg</i>	<b>Norw*</b>
		<b>environmental*</b>
103	<i>miljøvenn</i>	<b>friend*</b>





# Climate and air pollution in China

- Convenience sample in Chengdu, Sichuan province, China
- Respondents wrote by hand
- 1,123 responses
- Split-sample design
- Mean/median word count ~ 2

1A. 请写出当您听到或者看到“气候变暖”

厄尔尼诺  
温室效应  
环境污染  
人口爆炸

冰川融化, 平均气温升高, 海平面上升,

生存环境更恶劣

您将会参加一个关于大众对气候变暖认知的社会调查。

917

1A. 请写出当您听到或者看到“气候变暖”时, 脑海中的第一个词汇。(我们接受任何词句或短语)

冰川融化, 平均气温升高, 海平面上升,

# The split-sample instrument

You are being asked to participate in a survey examining public views regarding the environment.

您将会参加一个关于大众对气候变暖认知的社会调查。

*\*Respondents randomly assigned one of two questions 1A or 1B*

1A. Write down the first words that come to mind when you hear or read the words **global warming**? We welcome all answers, from a few sentences to a few words.

请写出当您听到或者看到“气候变暖”时，脑海中的第一个词汇。（我们接受任何词句或短语在内的答案）

1B. Write down the first words that come to mind when you hear or read the words **air pollution**? We welcome all answers, from a few sentences to a few words.

请写出当您听到或者看到“大气污染”时，脑海中的第一个词汇。（我们接受任何词句或短语在内的答案）

# Most frequently used words

Rank	Term	Translation	total	global warming	air pollution
[1]	雾霾	Haze/fog	125	5	120
[2]	热	Hot	56	54	2
[3]	汽车 尾气	Car exhaust	25	10	15
[4]	PM 2.5	Particulate matter	24	5	19
[5]	CO2	Carbon dioxide	23	13	10
[6]	污染	Pollution	23	18	5
[7]	冰川 融化	Ice melt	20	20	0
[8]	环境 污染	Environmental pollution	18	15	3
[9]	尾气	Exhaust	15	3	12
[10]	温室效应	Greenhouse effect	10	9	1

# Summary and future research

- It is useful to sub-divide Norwegians' climate change associations into four groups
- What comes to mind is moderately predictable
- Chinese respondents distinguish between climate change and air pollution
- Future directions:
  - Cross-country comparisons
  - Correspondence citizens – leaders
  - Experimental designs

# 北极熊

[endre.tvinnereim@uni.no](mailto:endre.tvinnereim@uni.no)