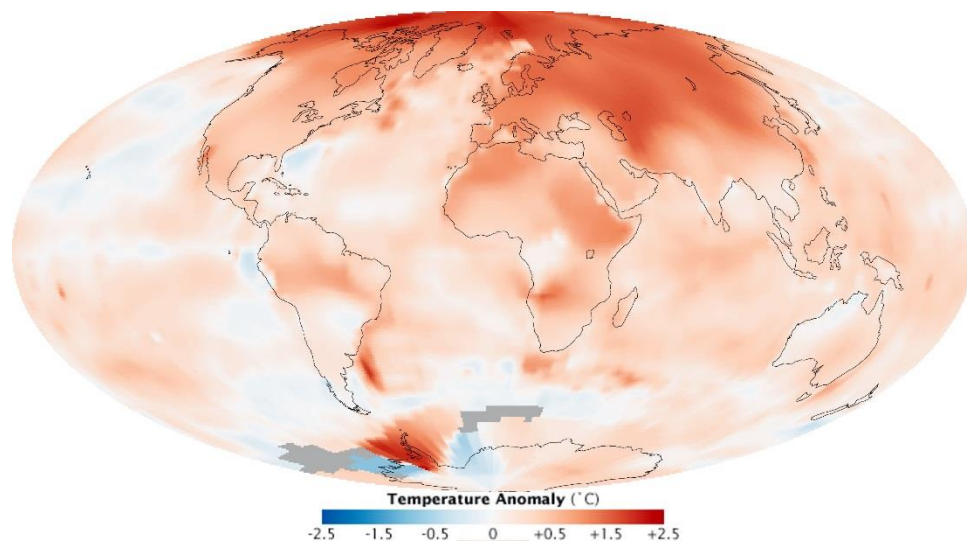


Public perceptions and engagement with climate change

Wouter Poortinga

 PoortingaW@Cardiff.ac.uk

 @wouterpoortinga

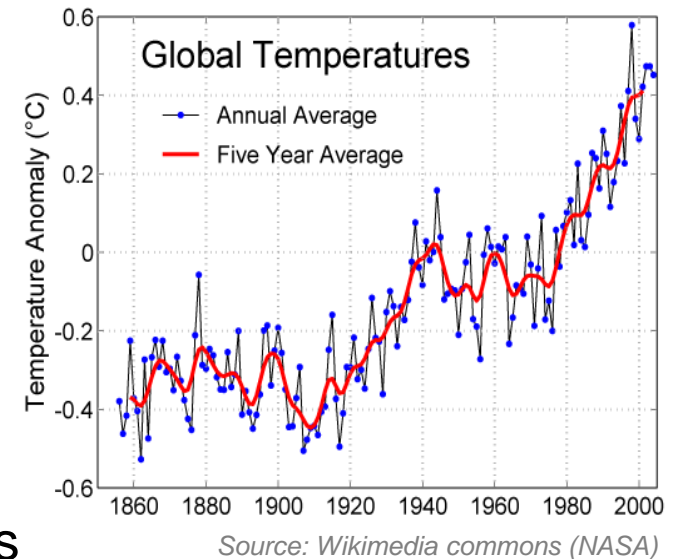
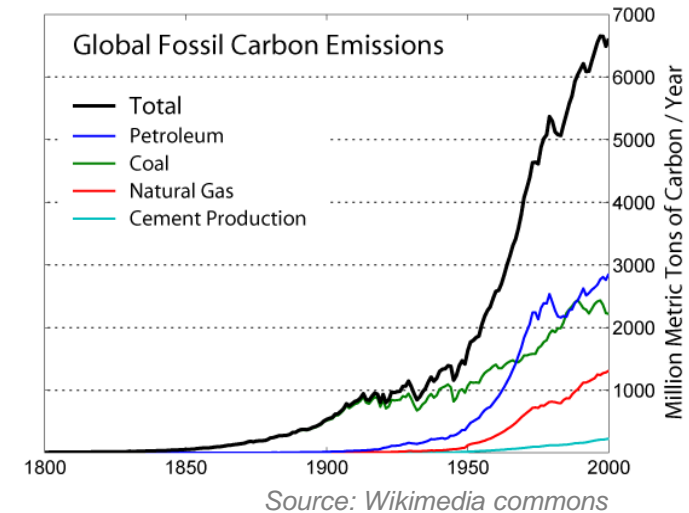


Source: Victor Korniienko (CC BY-SA 3.0)

- 1. Why study public perceptions of climate change?**
- 2. Historical trends in public perceptions**
- 3. Why is it difficult to engage with climate change?**
- 4. How do people make sense of climate change?**
 - weather
 - information from experts
 - media reporting
- 5. Climate change/environment as a political issue**
 - political polarisation

• Climate Change

- biggest environmental threat the world is currently facing
- policy to avoid ‘dangerous’ climate change: 2°C temperature increase
- **UK Climate Change Act 2008**: 25% reduction by 2020; 80% GHG reduction by 2050;
- **EU**: 20% below 1990 by 2020
Roadmap: 40% by 2030, 60% by 2040, 80% by 2050
- **Paris**: Reaffirm 2°C ‘goal’, while urging efforts for 1.5°C limit
- developed countries “should” undertake absolute economy-wide reduction targets



- **Ambitious targets require fundamental shifts in the way energy is used and produced**

→ one side is not enough

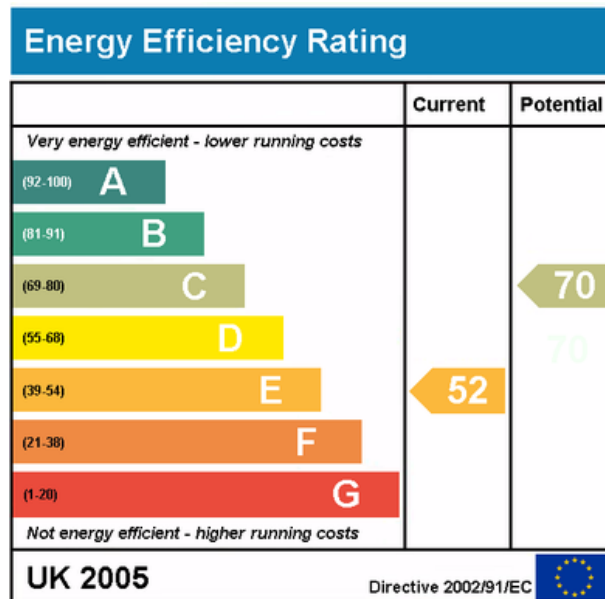
→ both *energy supply* and *demand changes*

→ *new energy technologies to decarbonise supply*

→ *reduce household energy (half of all demand!)*



Source: Wikimedia commons (Kim Hansen)



Source: Wikimedia commons (Gralo)

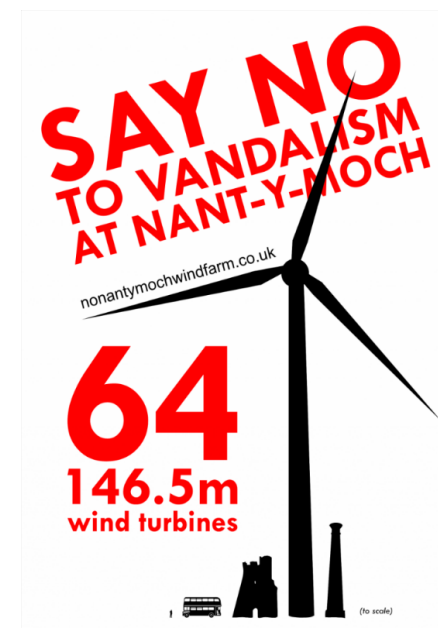
- **Public perceptions and attitudes critical to achieve sustainability targets** (*Spence et al 2009*)

→ Supply side: community opposition can lead to delays and cancellations in planning and construction

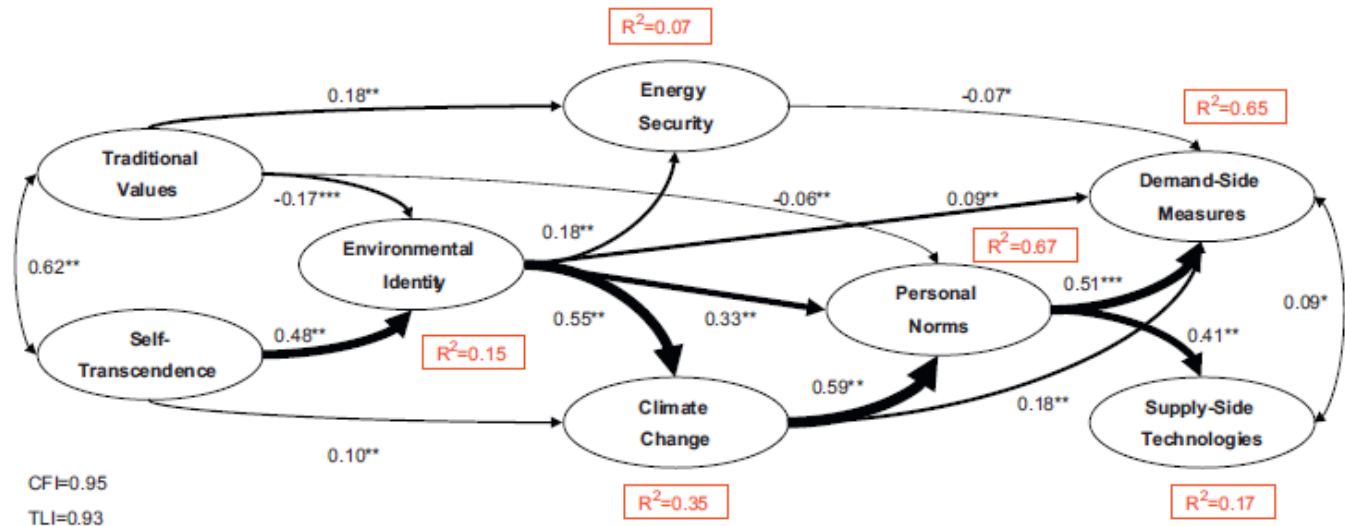
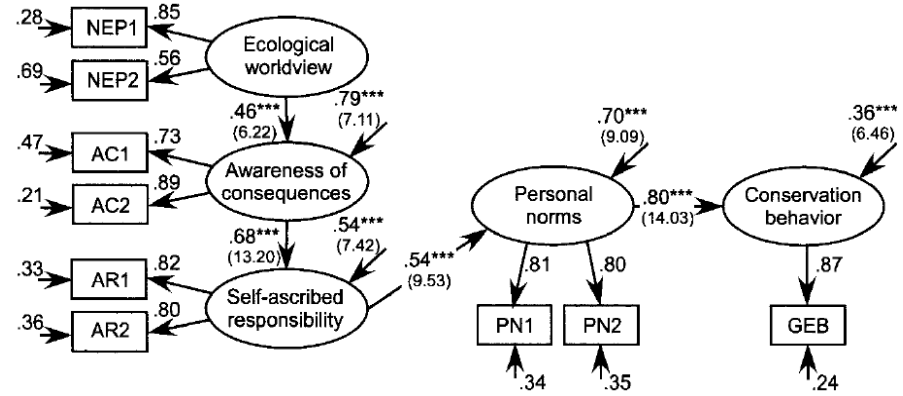
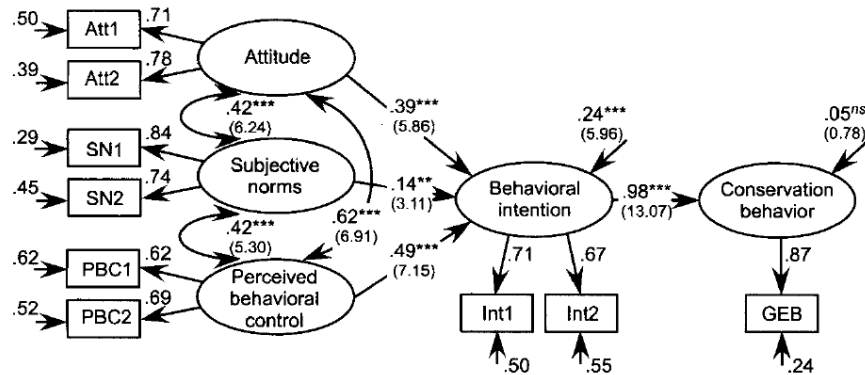
→ Demand side: willingness to take action against climate change in terms of behavioural change and compliance with wider policies



Source: Wikimedia commons (Jakob Huber)



Source: Nonantymochwindfarm.co.uk



CFI=0.95
TLI=0.93
 $\chi^2(259)=1194.80, p<0.001$
RMSEA=0.045

Historical trends in perceptions of climate change



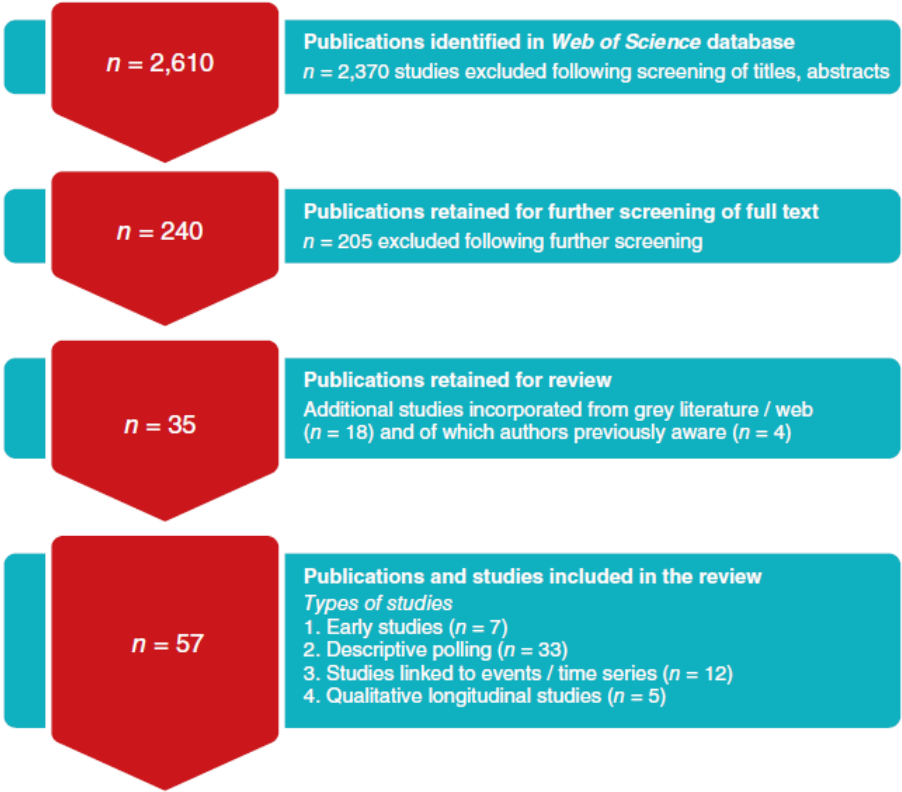
Overview

International trends in public perceptions of climate change over the past quarter century



Stuart Capstick,^{1,2,3*} Lorraine Whitmarsh,^{1,2} Wouter Poortinga,^{1,2} Nick Pidgeon^{1,2,3} and Paul Upham^{2,4}

Public perceptions of climate change are known to differ between nations and to have fluctuated over time. Numerous plausible characterizations of these variations, and explanations for them, are to be found in the literature. However, a clear picture has not yet emerged as to the principal trends and patterns that have occurred over the past quarter-century or the factors behind these changes. This systematic review considers previous empirical research that has addressed the temporal aspects to public perceptions. We address findings that have been obtained since the 1980s and using a range of methodologies. In this review, we consider early, seminal work examining public perceptions; survey studies carried out over long timescales and at an international scale; detailed statistical analyses of the drivers of changing perceptions; and qualitative research featuring a longitudinal component. Studies point to growing skepticism in the latter 2000s in some developed countries, underpinned by economic and sociopolitical factors. Even so, in many parts of the world, there has been growing concern about climate change in recent years. We conclude that the imbalance in the literature toward polling data, and toward studies of public perceptions in Western nations (particularly the United States), leaves much unknown about the progression of public understanding of climate change worldwide. More research is required that uses inferential statistical procedures to understand the reasons behind trends in public perceptions. The application of qualitative longitudinal methodologies also offers the potential for better appreciation of the cultural contexts in which climate change perceptions are evolving. © 2014 The Authors. *WIREs Climate Change* published by John Wiley & Sons, Ltd.



- **International trends in public perceptions of climate change over the past quarter century**
- **Four indicative phases:**
 1. **1980s to Early 1990s:** *Increasing knowledge and awareness*
 2. **Early 1990s to Mid 2000s:** *Growth and fluctuation in concern*
 3. **Mid 2000s to Late 2000s:** *Increasing scepticism and polarization*
 4. **Late 2000s to the Early 2010s:** *A new phase for public perceptions?*

- **Early studies** (*Capstick et al 2014*)

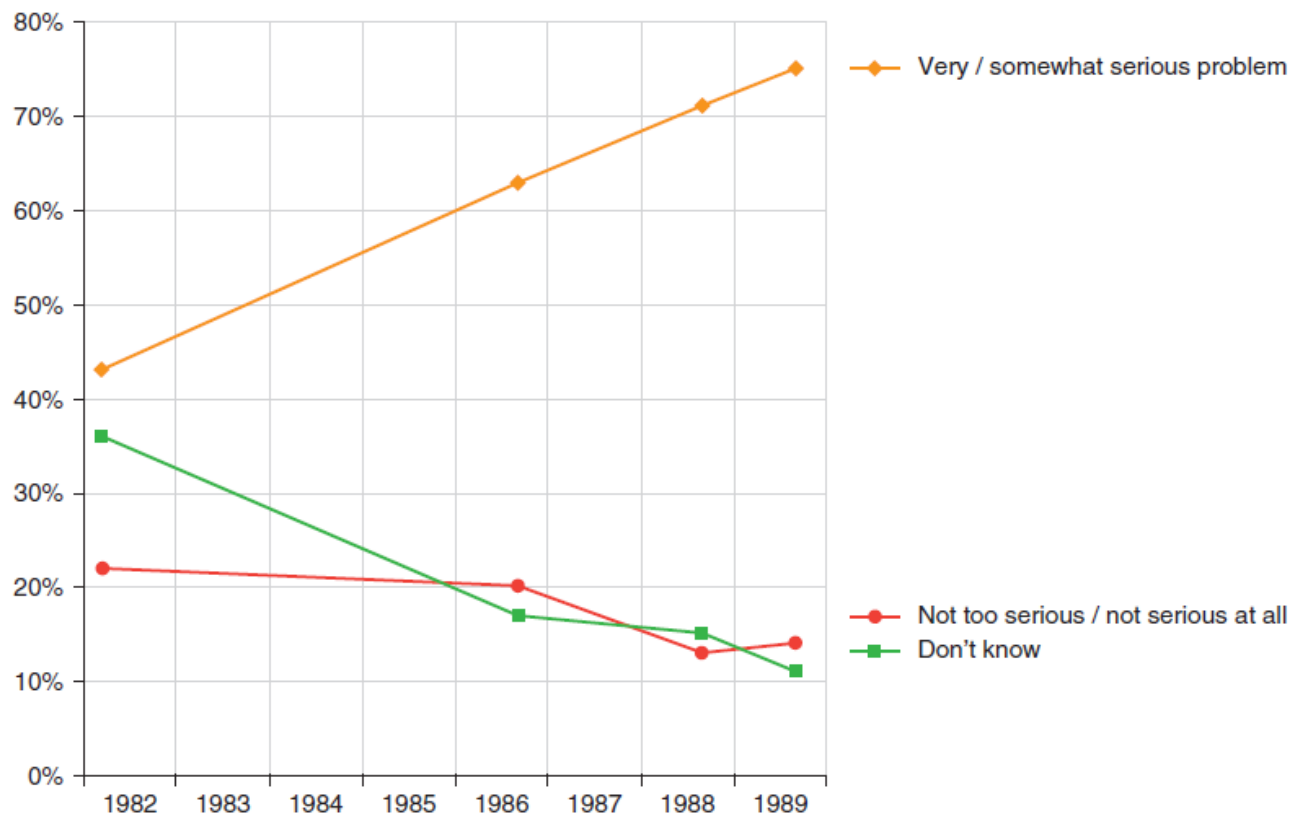
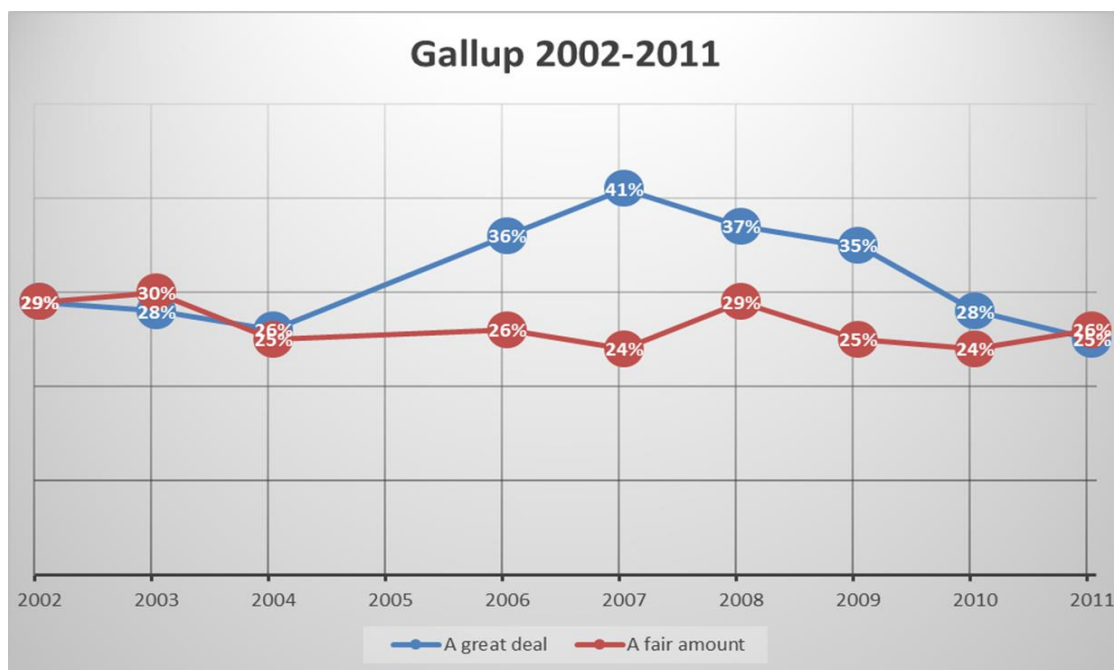


FIGURE 2 | Early trends in public perceptions in the United States. Data points show how 'serious' U.S. public survey respondents considered climate change to be during the 1980s. Data obtained from Ref. 58 ($n \geq 1000$ at each time-point).

- **Public attitudes from mid-1990s to mid-2000s**
 - ‘universal’ awareness from late 1990s onwards
 - increasing levels of concern from late 1990s onwards
 - but, interest/concern ‘peaked’ in mid 2000s



Source: Gallup

Poortinga et al 2011:

“As far as you know, do you personally think the world’s climate is changing, or not?”

	2005 (1,491)	2010 (1,822)
Yes	91	78
No	4	15
Don't know	5	6

- **Increasing scientific evidence of anthropogenic CC**
 1. **IPCC I (1990):** *there is a natural greenhouse effect* (...); emissions resulting from *human activities* are substantially increasing the atmospheric concentrations of GH gases (...). *This will enhance the greenhouse effect* (...)
 2. **IPCC II (1995):** CO₂ remains the most important contributor to anthropogenic forcing of CC; projections of future global mean temperature change and sea level rise *confirm the potential for human activities to alter the Earth's climate to an extent unprecedented in human history*
 3. **IPCC III (2001):** *Increasing body of observations gives a collective picture of a warming world and other changes in the climate system* (...) and there is new and stronger evidence that [this is] attributable to human activities
 4. **IPCC IV (2007):** *Warming of the climate system is unequivocal*, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising sea levels.
 5. **IPCC V (2013):** *Warming of the climate system is unequivocal*, and (...) many of the observed changes are unprecedented over decades-millennia.

Source: Wikimedia commons (Christof Berger)

Photo: David Baird

Given that evidence for climate change is overwhelming, why do people (still) find it difficult to engage with the topic?



Without copyright



Without copyright

Psychological distance

- **Climate Change perceived as a ‘remote’ issue**
 - not *directly* observable
 - abstract – global
 - in the future
 - far away
 - uncertainty about the exact effects
- **Climate Change ultimate social dilemma** (*Vlek & Keren 2002*)
 - social-spatial-temporal-‘benefit-risk’ (uncertainty) dilemma
 - ‘wicked issue’

*Won't affect
people like me*

Social Distance

*Does it really
exist/have serious
impacts?*

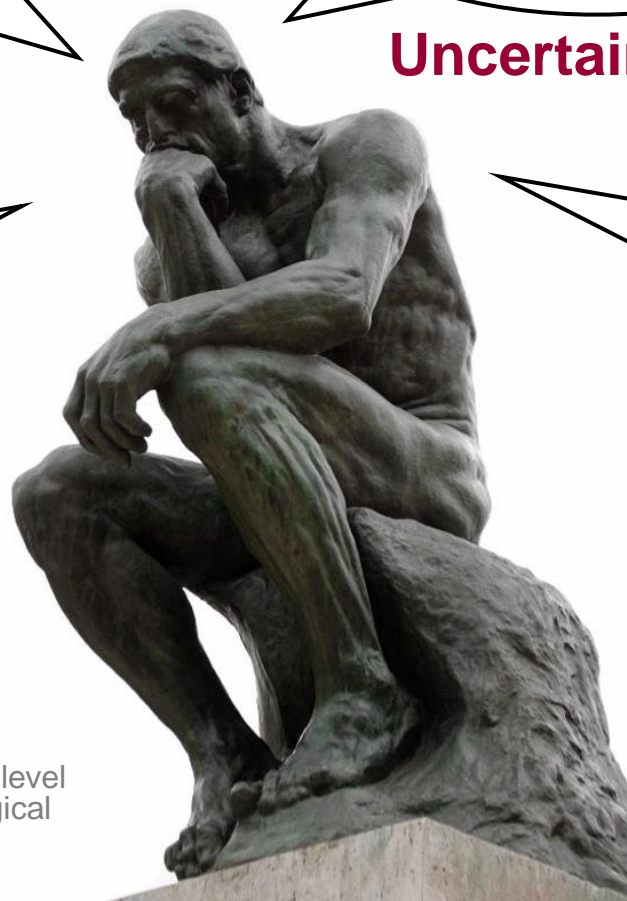
Uncertainty Distance

*Won't happen
here*

Geographic Distance

*Won't happen in
my lifetime*

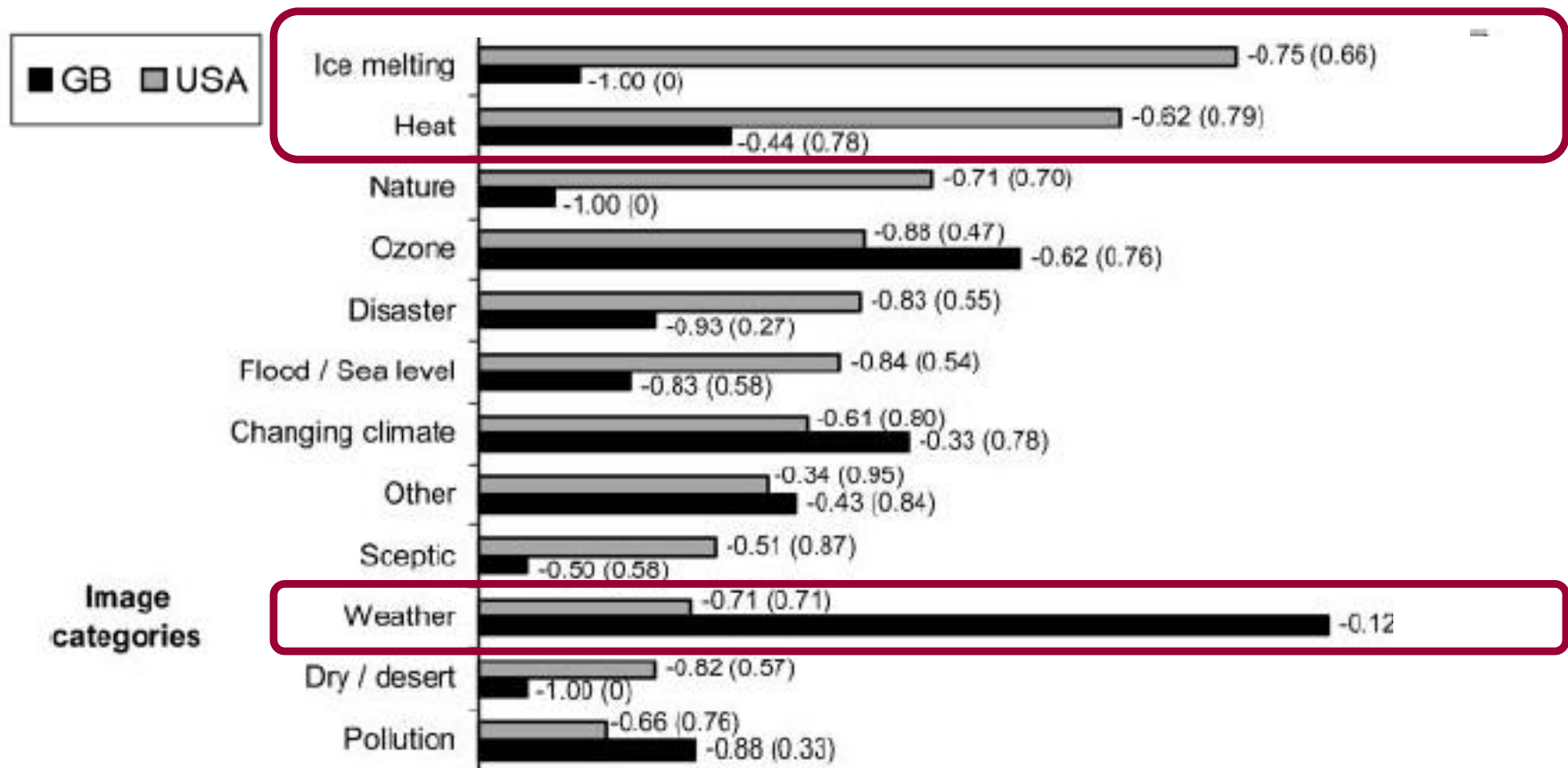
Temporal Distance



- **Climate Change is unobtrusive and fundamentally unobservable**
 - Climate change: “*long-term shifts in the planet's weather patterns or average temperatures*”
 - almost impossible to experience directly
- **People are therefore dependent upon ‘proxies’ and secondary sources to experience/learn about climate change**
 1. weather: temperature anomalies and extreme events
 2. information from experts
 3. media reporting

Weather and weather events

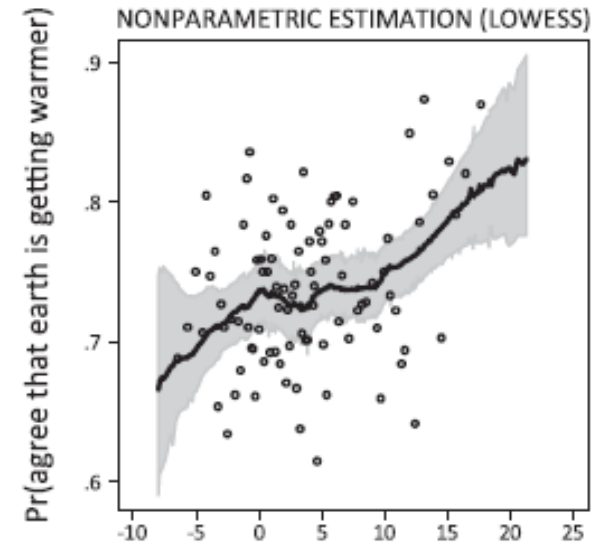
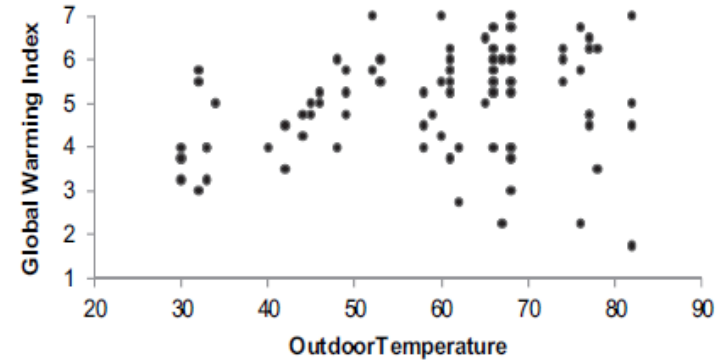
- Public Associations with *Global Warming* (US) and *Climate Change* (UK)





Source: YouTube screen capture

- **Joireman et al 2010**
 - positive correlation between the outdoor temperature and beliefs in GW
 - heat primes increase believe in GW
- **“Anomaly” analyses** (*Capstick et al*)
 - **Deryugina (2013)**: short term anomalies (<2 weeks) don't have an effect; longer term anomalies (>1 month) do
 - **Donner & McDaniels (2013)**: 3-12 month temperature anomaly has effect
 - **Egan & Mullin (2012)**: weekly anomaly associated with GW beliefs; but effect diminishes over time



- **Climate Change itself not directly observable**
 - lack of *direct experience of consequences* hurdle to engagement
 - experiencing (potential) effects of CC may motivate action
 - more extreme weather events (e.g. rain and as result flooding) are forecasted as result of CC
- **Does *experience of flooding* affect perceptions**
 - ... reduce psychological distance?
 - ... lead to action?



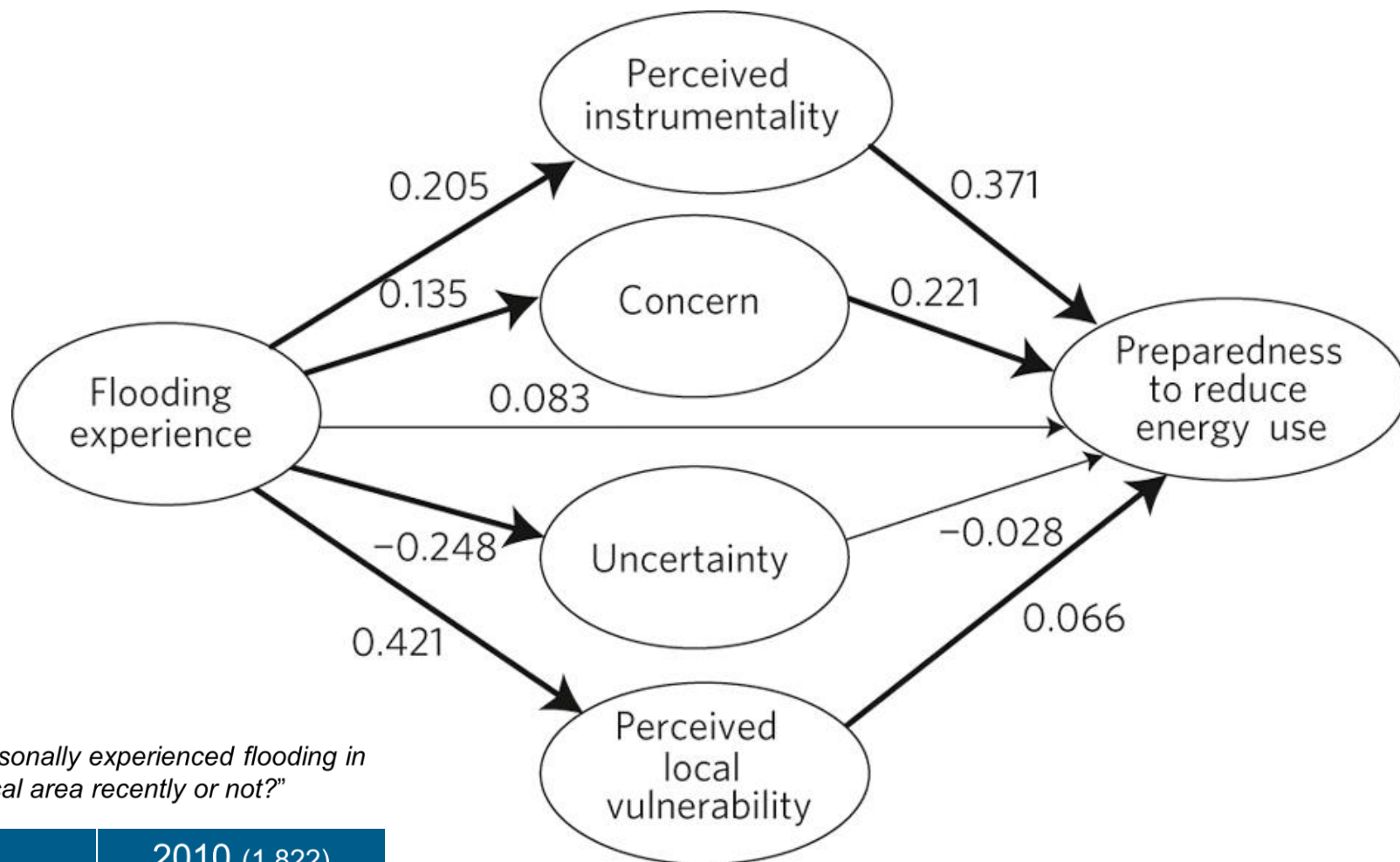
Photo: G Friedrich



Photo: Philip Halling (CC)



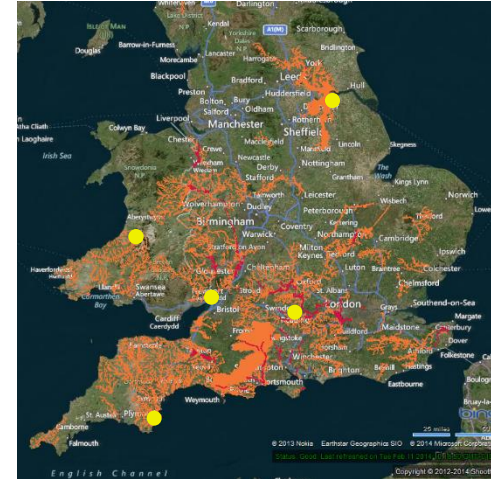
Photo: FEMA (Walter Jennings)



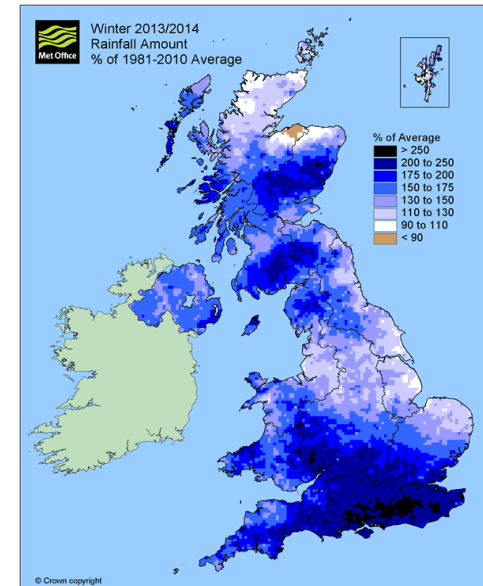
“Have you personally experienced flooding in your local area recently or not?”

	2010 (1,822)
Yes	20
No	79
Don't know	1

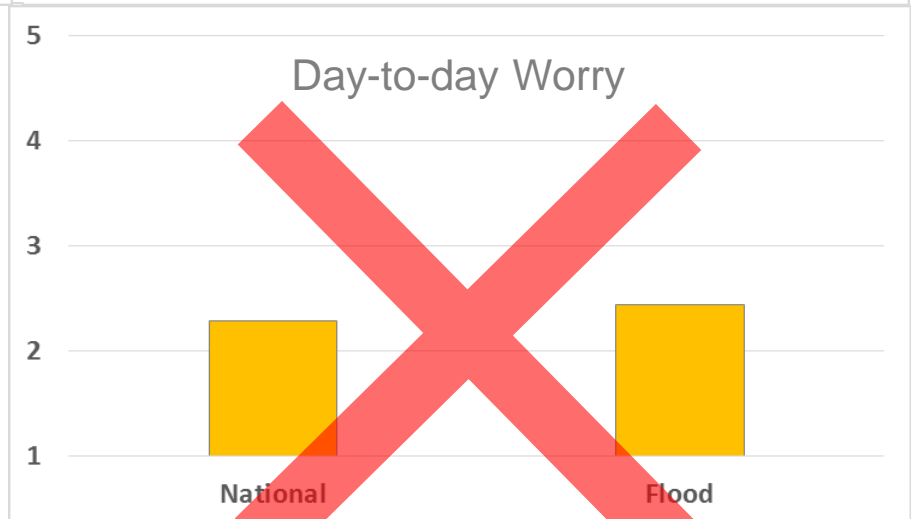
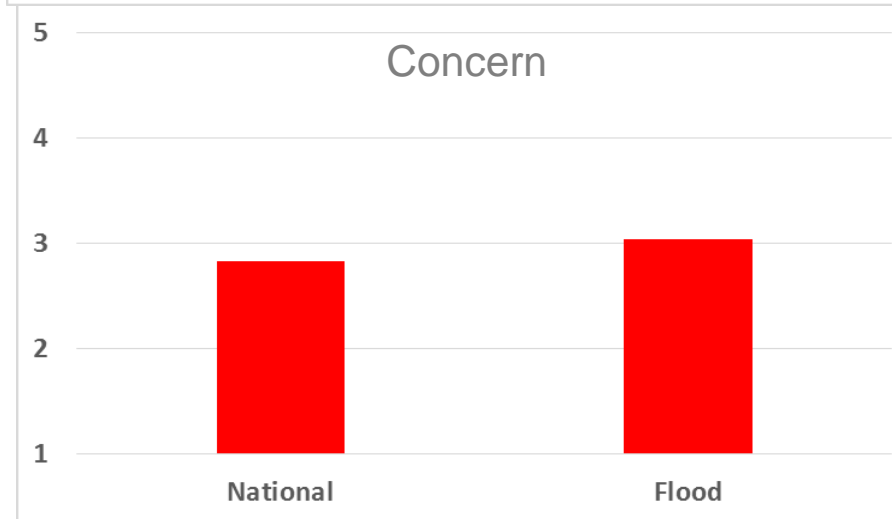
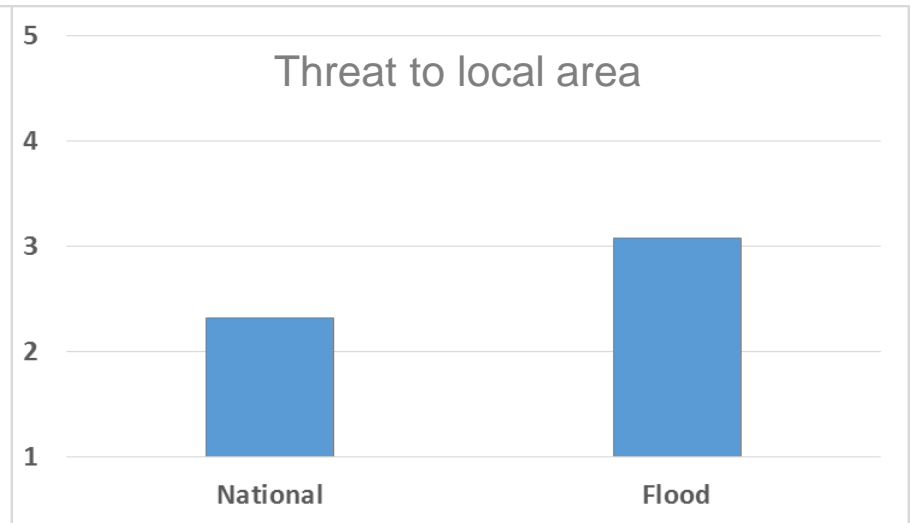
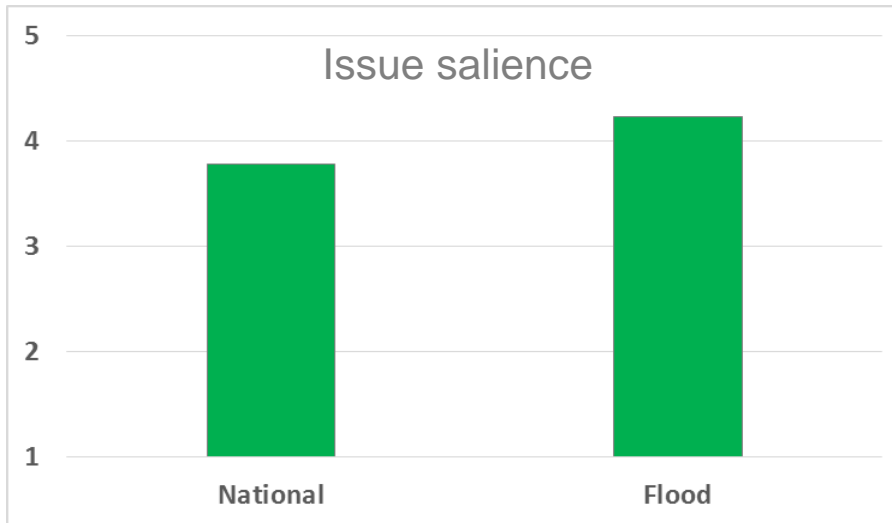
- **Demski et al (2017): Climate Change Perceptions in Britain following the 2013/14 winter flooding**
 - **national sample** (n=975) versus **flood-affected areas** (n=162)
 - flood areas selected from flood maps (*Aberystwyth, Dawlish, Gloucester-Tewkesbury, Hull, Sunbury-Windsor*)
 - fieldwork August-October 2014
 - national sample and flood affected areas compared on *a-priori* selected variables
 - differences controlled for gender and socio-economic status

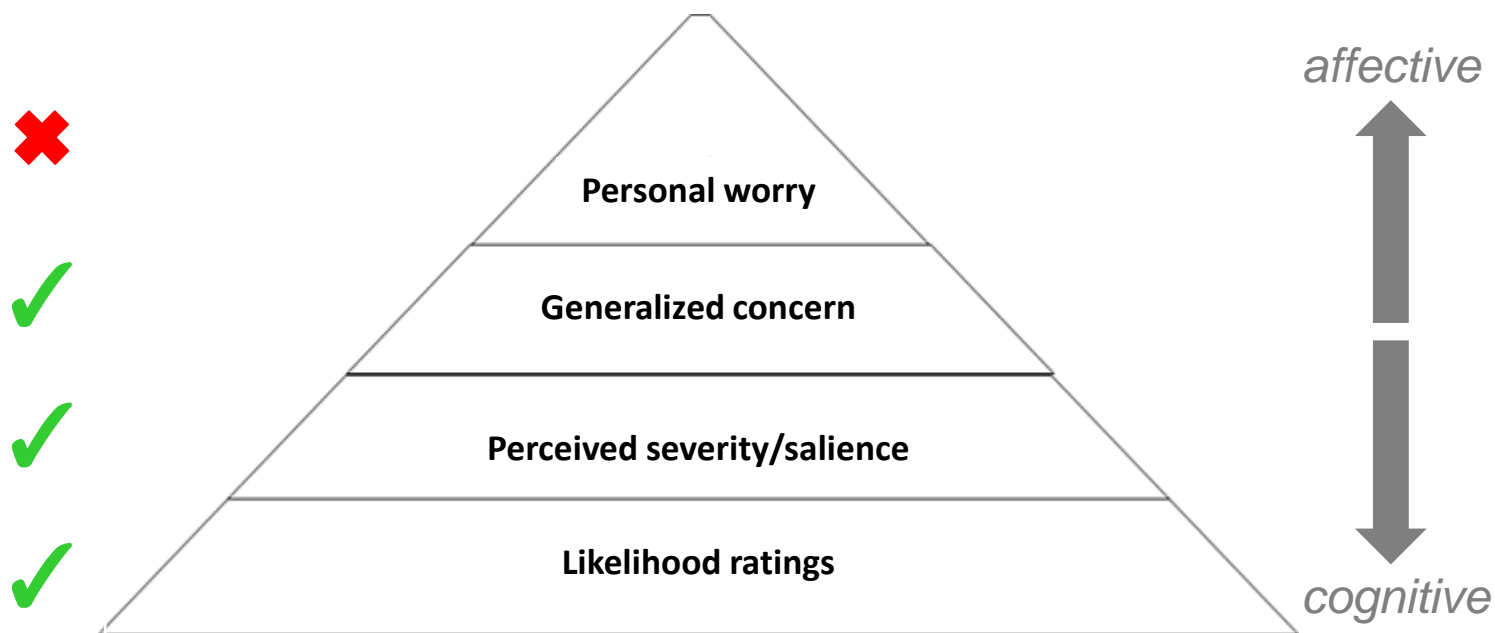


Dataset licensed under Open Government license



Source: MetOffice (Crown copyright)





Hierarchy of concern (HoC) model

Experts, scientific consensus, and trust

- **Climate change is a complex, technical, difficult to understand phenomenon**
 - can only be understood through mathematical modelling & scientific measurements
 - not everybody can (or should) do that themselves
 - outsource knowledge & evidence collection to experts
 - *trust* becomes critically important – and trust is easily lost
 - A crisis of trust in (environmental) science?
 - climate gate (2009) – hacked UEA emails: Gave impression that figures were tampered with

Experts, scientific consensus, and trust



Source: YouTube screen capture

Experts, scientific consensus, and trust

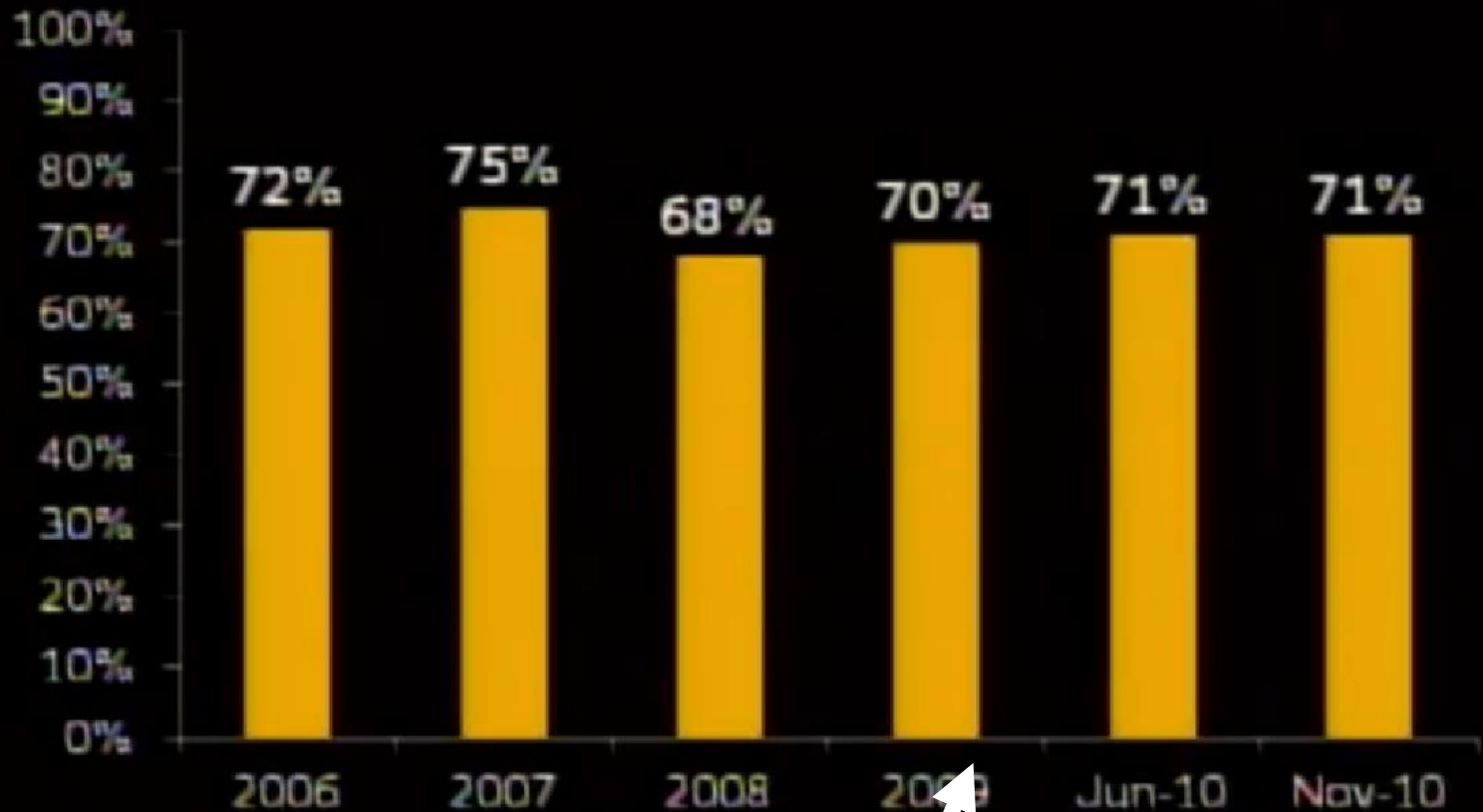
How much do you trust or distrust the following as a source of information about global warming?



climate gate

Experts, scientific consensus, and trust

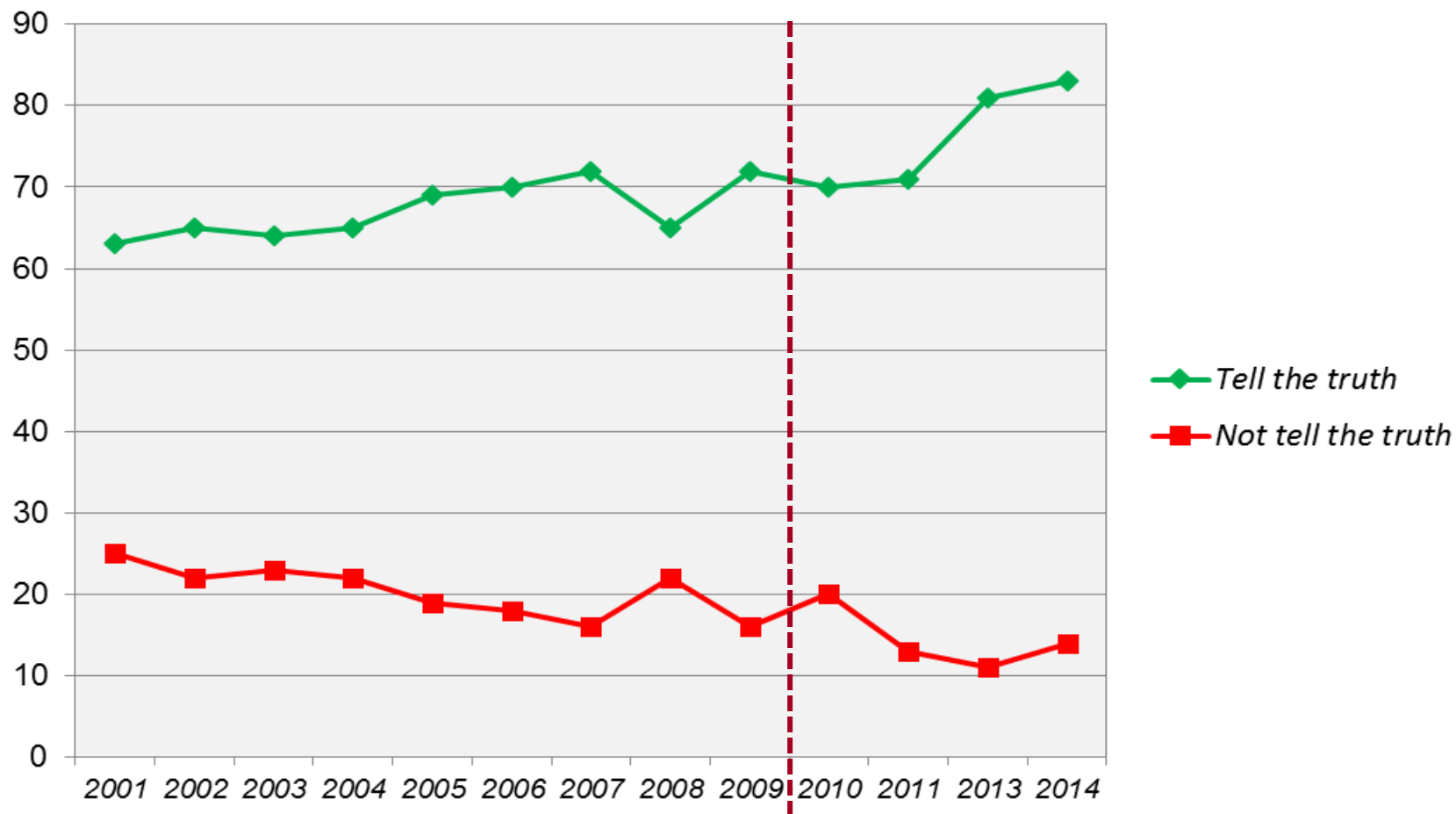
Trust Scientists Studying the Environment (Completely, A Lot, or A Moderate Amount)



climate gate *Krosnick 2012 (YouTube)*

Source: YouTube screen capture

The Veracity Index (Scientists)



climate gate

Ipsos MORI

• (Perceived) scientific consensus as gateway belief?

RESEARCH ARTICLE

The Scientific Consensus on Climate Change as a Gateway Belief: Experimental Evidence

Sander L. van der Linden^{1*}, Anthony A. Leiserowitz², Geoffrey D. Feinberg², Edward W. Maibach³

¹ Department of Psychology and Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, New Jersey, United States of America, ² Yale Project on Climate Change Communication, School of Forestry and Environmental Studies, Yale University, New Haven, Connecticut, United States of America, ³ Center for Climate Change Communication, Department of Communication, George Mason University, Fairfax, Virginia, United States of America

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Abstract

Journal of Risk Research
2010, 1–28, iFirst Article

 Routledge
Taylor & Francis Group

Cultural cognition of scientific consensus

Dan M. Kahan^{a*}, Hank Jenkins-Smith^b and Donald Braman^c

^aYale Law School, Yale University, New Haven, USA; ^bDepartment of Political Science, University of Oklahoma, Norman, USA; ^cGeorge Washington Law School, George Washington University, Washington, USA

(Received 13 February 2010; final version received 23 July 2010)

nature
climate change

ARTICLES

PUBLISHED ONLINE: 28 OCTOBER 2012 | DOI: 10.1038/NCLIMATE1720

The pivotal role of perceived scientific consensus in acceptance of science

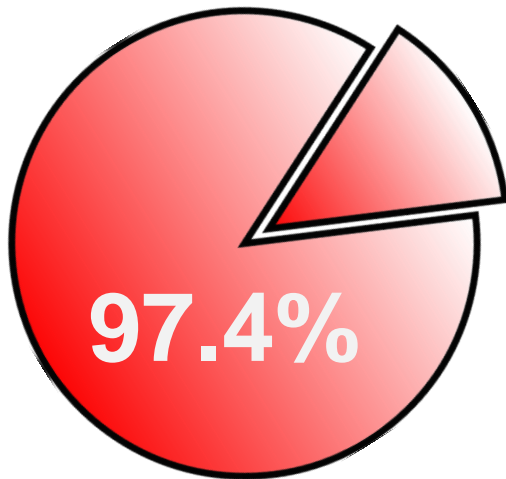
Stephan Lewandowsky^{*}, Gilles E. Gignac and Samuel Vaughan

Although most experts agree that CO₂ emissions are causing anthropogenic global warming (AGW), public concern has been declining. One reason for this decline is the 'manufacture of doubt' by political and vested interests, which often challenge the existence of the scientific consensus. The role of perceived consensus in shaping public opinion is therefore of considerable interest: in particular, it is unknown whether consensus determines people's beliefs causally. It is also unclear whether perception of consensus can override people's 'worldviews', which are known to foster rejection of AGW. Study 1 shows that acceptance of several scientific propositions—from HIV/AIDS to AGW—is captured by a common factor that is correlated with another factor that captures perceived scientific consensus. Study 2 reveals a causal role of perceived consensus by showing that acceptance of AGW increases when consensus is highlighted. Consensus information also neutralizes the effect of worldview.

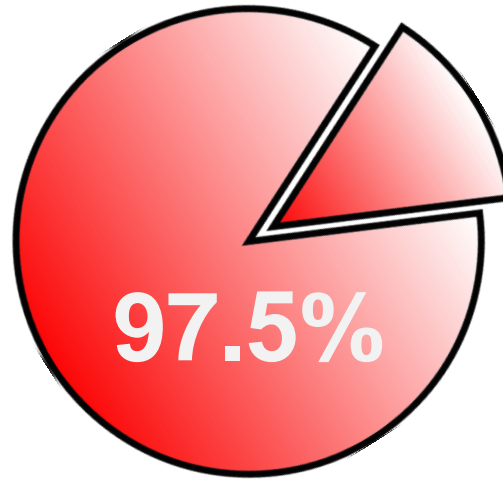
agree – sharply and persistently – about facts agree? We designed a study to test a distinctive of scientific consensus. The 'cultural cognition individuals to form risk perceptions that are presents both correlational and experimental cognition shapes individuals' beliefs about the d the process by which they form such beliefs, disposal of nuclear wastes, and the effect of

Experts, scientific consensus, and trust

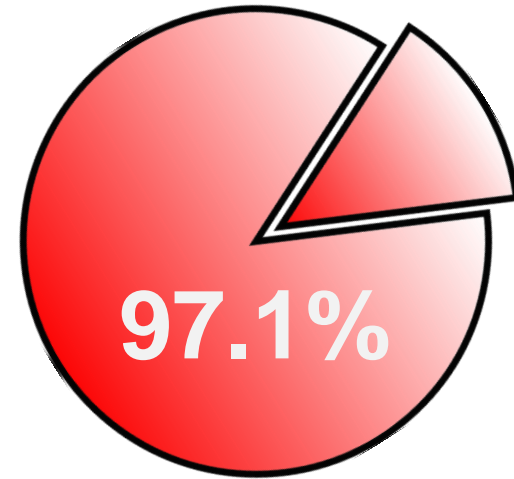
- **Percentage of climate scientists/academic papers supporting tenets of anthropogenic climate change**



Doran & Zimmerman 2009



Anderegg et al 2010



Cook et al 2014

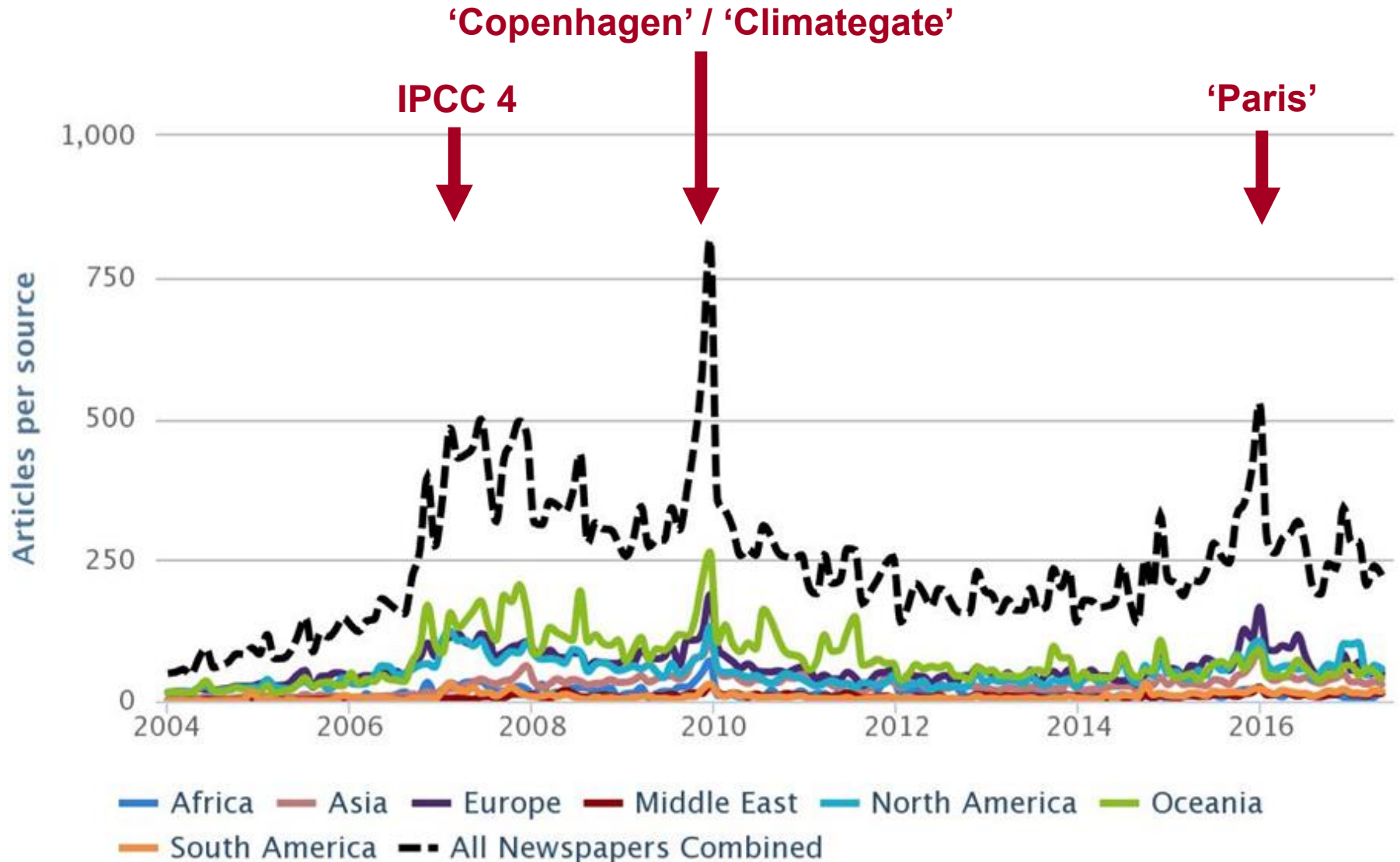
- Belief in scientific consensus**

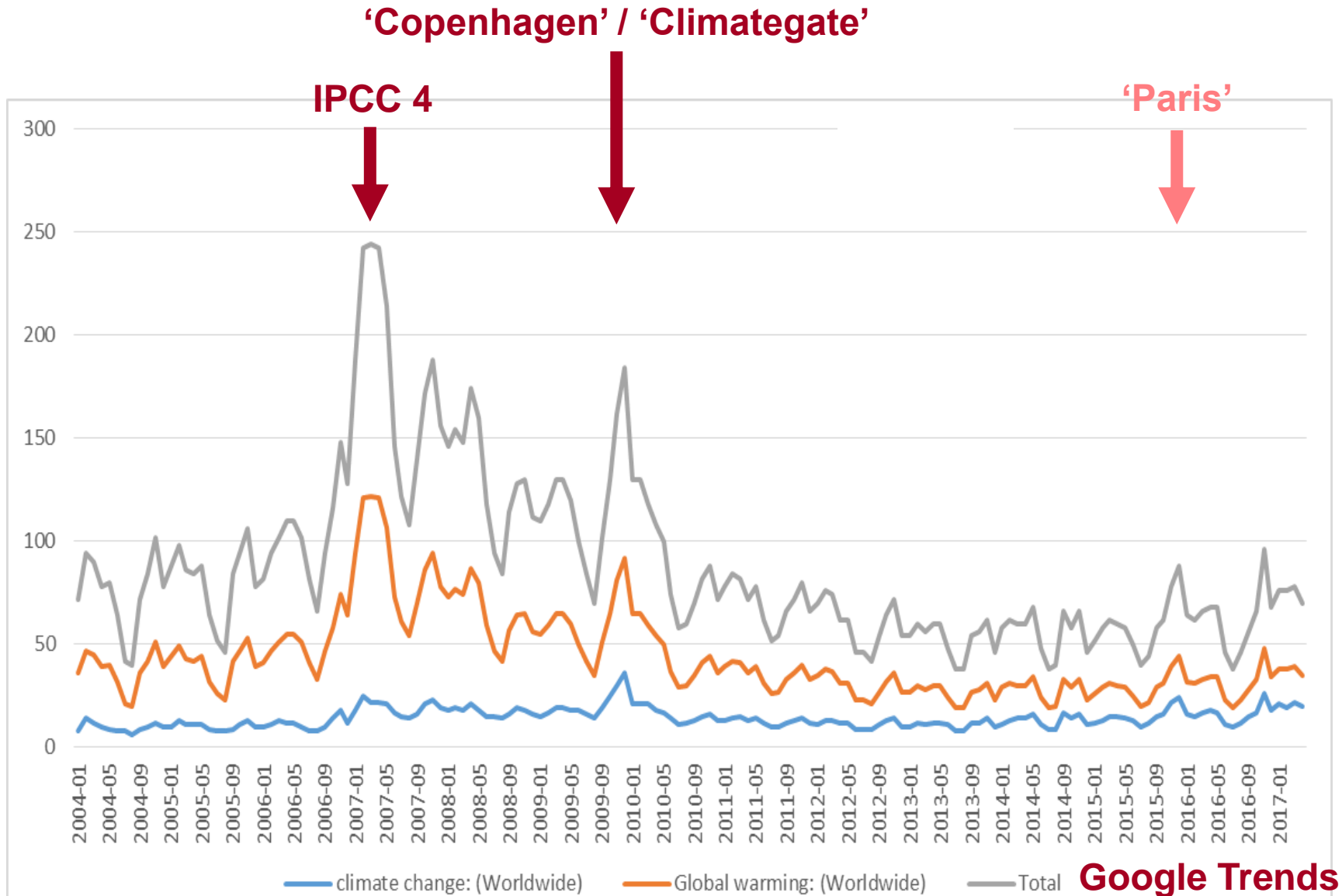
“To the best of your knowledge, what proportion of scientists agree that climate change is happening and that humans are largely causing it?”

	The vast majority of scientists agree (80% or more)	Most scientists agree (more than 50% but fewer than 80%)	As many scientist agree as disagree (50%)	Some scientists agree (more than 20% but fewer than 50%)	A small minority of scientists agree (20% or less)
France	33%	33%	18%	7%	3%
Germany	24%	30%	19%	8%	4%
Norway	35%	29%	18%	4%	3%
UK	30%	28%	20%	6%	5%

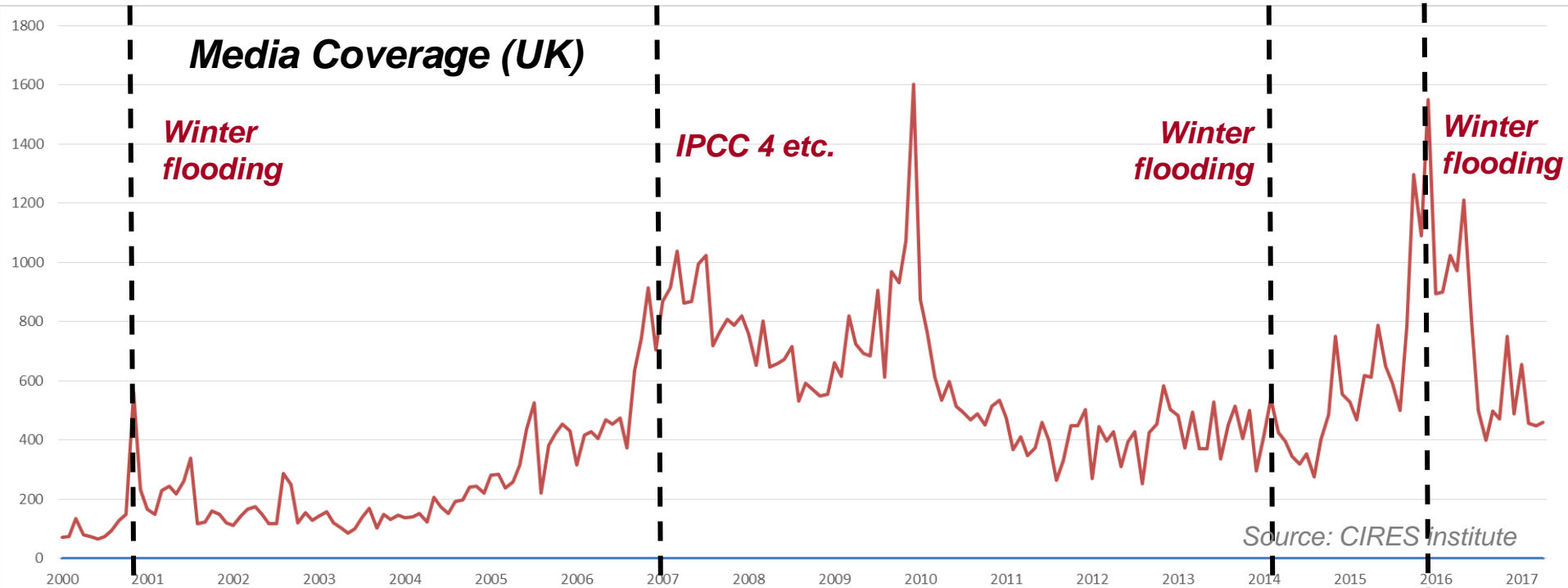
- **Media as agenda setter (McCombs & Shaw 1972)**



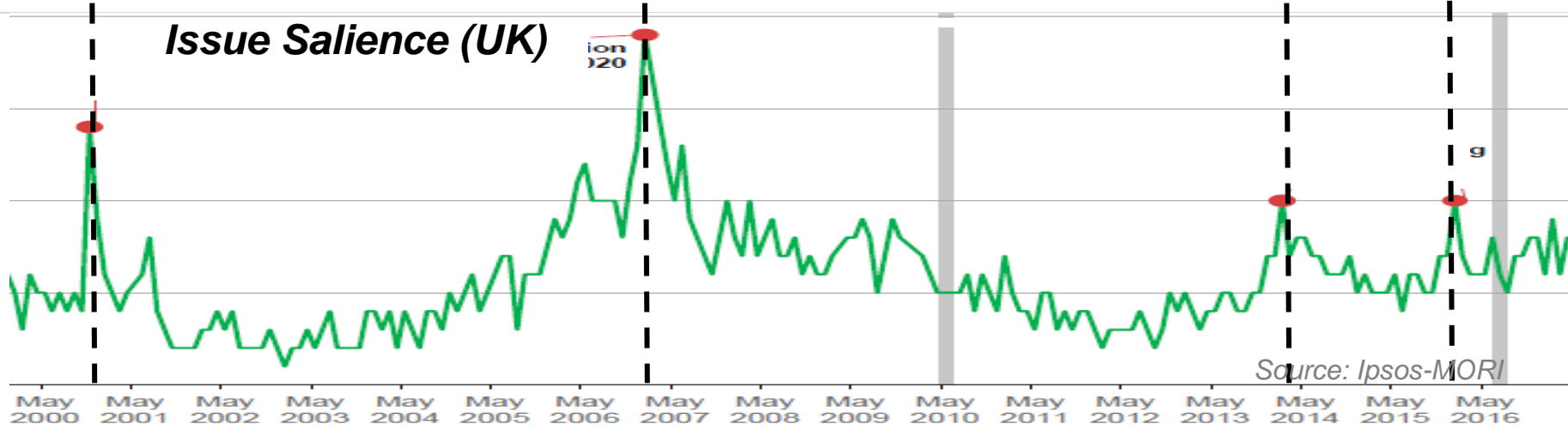




Media Coverage (UK)



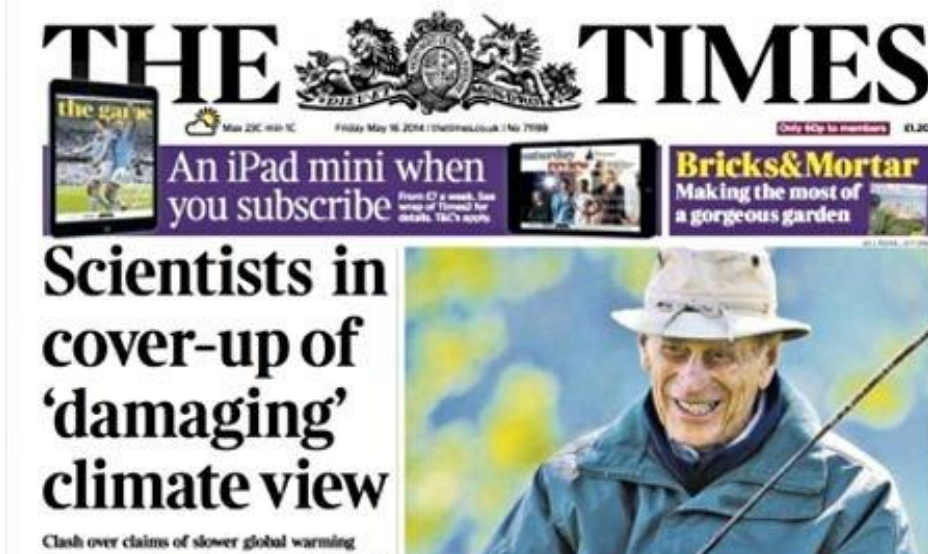
Issue Salience (UK)





Global warming is creating MORE ice: Antarctic levels reach a record high because of climate change, scientists claim

- Claim was made by Mark Serreze, director of the National Snow and Ice Data Centre, when speaking to Harold Ambler at Talking About the Weather



- **Climate change increasingly politicised**
 - attitudes polarised according to partisan lines in US
 - biased assimilation and contrast effect
 - motivated reasoning
 - mitigation policies involving regulation & individual action threaten identities and worldviews (*Kahan et al., 2011*)
 - changing views on CC because dislike of solutions

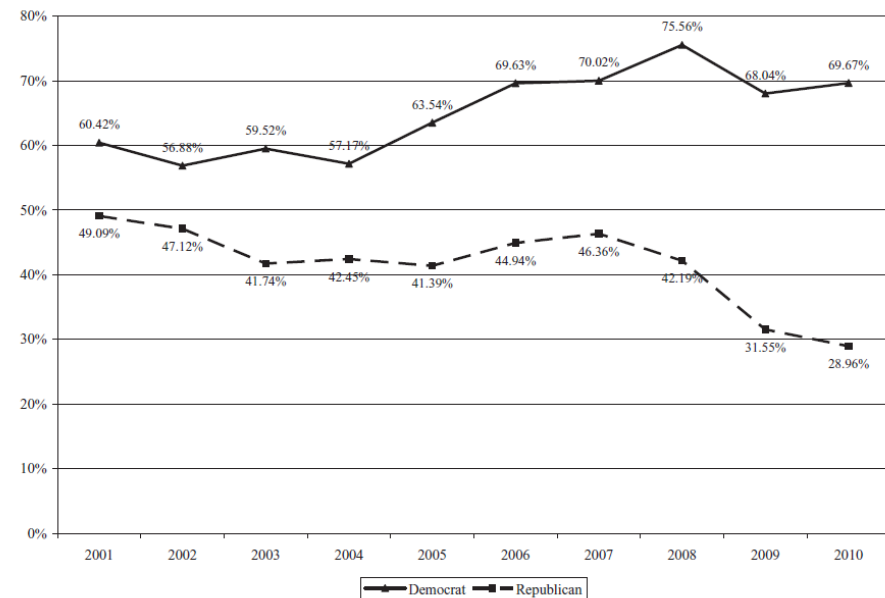
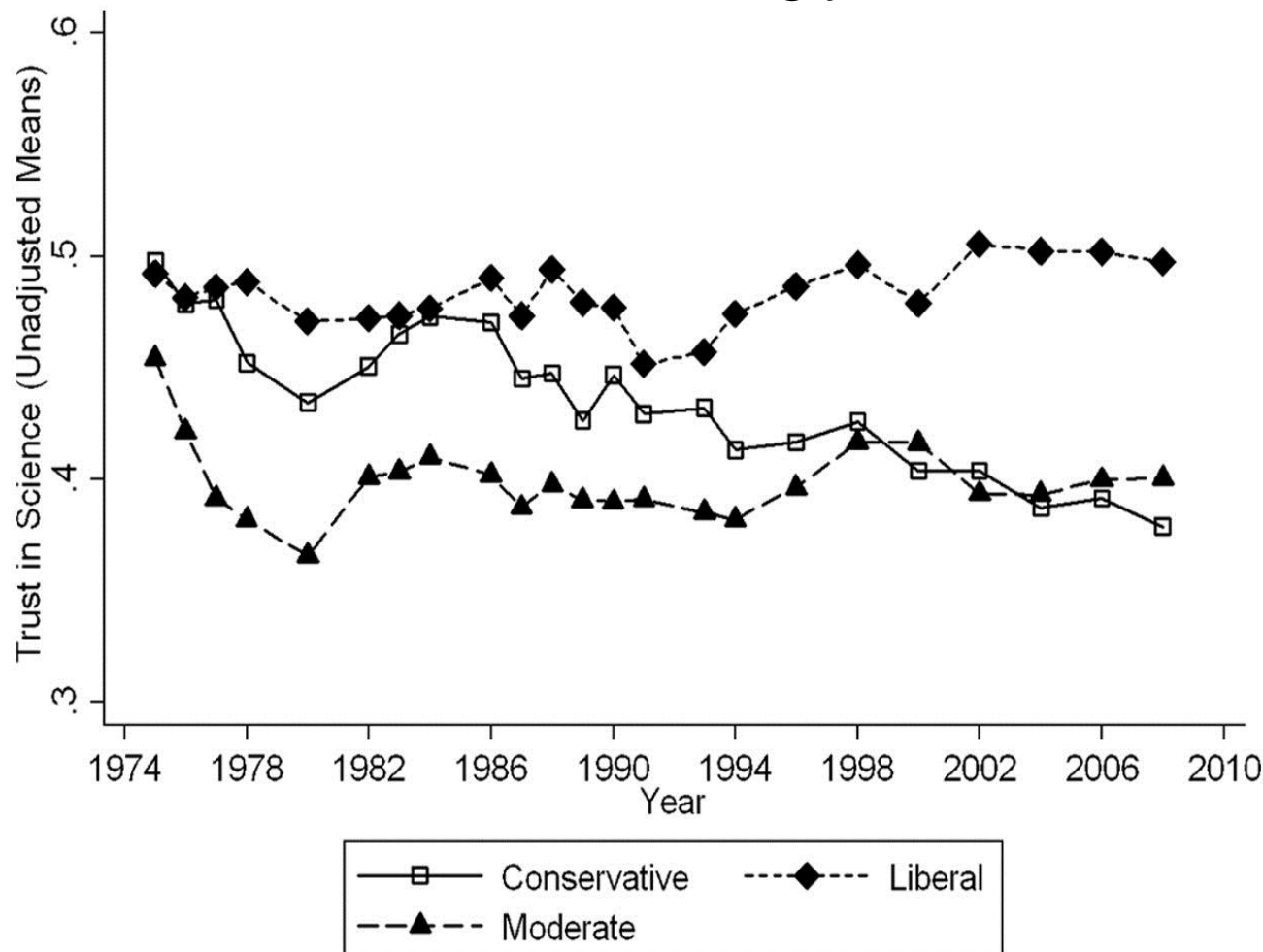


FIGURE 4. Percent of Americans Who Believe the Effects of Global Warming Have Already Begun to Happen from 2001–2010, by Political Ideology and Party Identification.

- **Public trust in science has become polarized too!**
 - conservatives increasingly distrustful of science

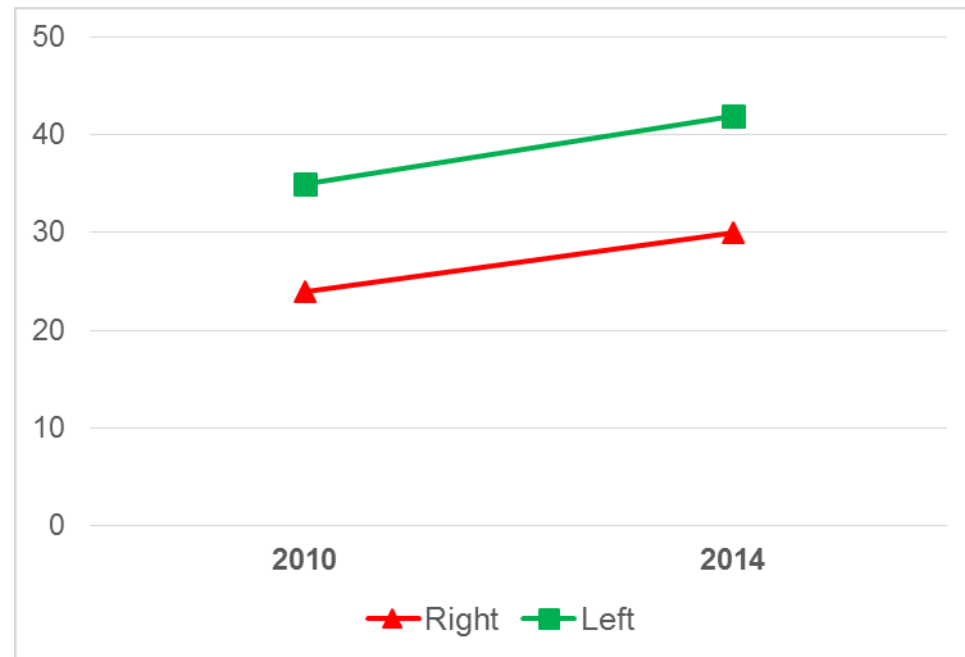


Poortinga et al 2011

	Scepticism Scale	Climate Change does not exist
	B (SE) p	B (SE) p
Gender		
Male	0.00 (0.04) n.s.	0.22 (0.14) n.s.
Age		
25-34	-0.06 (0.07) n.s.	-0.18 (0.29) n.s.
35-44	0.00(0.06) n.s.	0.46 (0.25) n.s.
45-54	0.04 (0.06) n.s.	0.17 (0.26) n.s.
55-64	0.16 (0.07) *	0.66 (0.26) *
65 plus	0.22 (0.06) ***	0.65 (0.24) **
Social Grade		
C1	0.19 (0.05) ***	0.20 (0.20) n.s.
C2	0.21 (0.05) ***	0.52 (0.20) *
DE	0.21 (0.06) ***	0.47 (0.21) *
Voting Intention		
Conservative	0.22 (0.05) ***	0.80 (0.20) ***
Labour	-0.05 (0.05) n.s.	0.41 (0.21) n.s.
LibDems	-0.05 (0.07) n.s.	0.03 (0.30) n.s.
Other	0.02 (0.07) n.s.	0.51 (0.27) n.s.
Would not Vote	0.05 (0.06) n.s.	0.90 (0.22) ***

Which of the following best describes your opinion about the causes of CC?

mainly/entirely caused by human activity

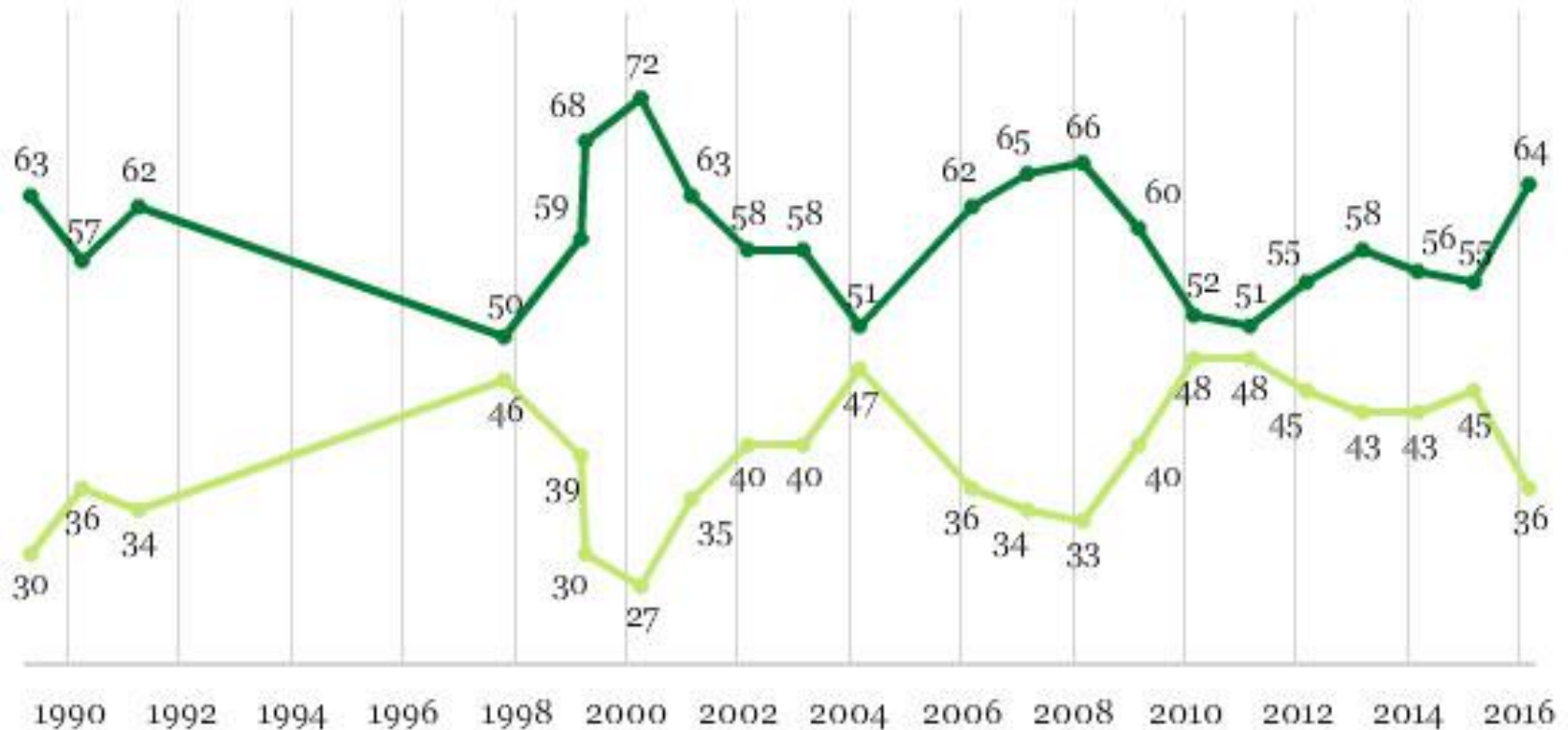


- **While awareness of climate change is high, it remains an issue that is difficult to engage with**
 - concern appears to be decreasing despite high levels of belief in it happening
- **Media reports around ‘focusing events’ (e.g. floods) may push issue up the agenda**
 - but effects are generally short-lived
 - only happen in absence of economic challenges
- **A natural attention cycle? (*cf. Issue attention Cycle*)**
 - difficult to remain engaged with (any) issue for long time
 - wax-and-waning with ‘dramatic’ events (Downs 1972)

Issue Attention Cycle

How Much Americans Worry About Global Warming

■ % Great deal/Fair amount ■ % Only a little/Not at all



GALLUP®

Source: Gallup

“The current level of worry is essentially the same as it was in 1989”

 PoortingaW@Cardiff.ac.uk
 @wouterpoortinga



CARDIFF
UNIVERSITY

PRIFYSGOL
CAERDYDD



Others

SOCIAL

Self

Future

TEMPORAL

Present

Far away

SPATIAL

Close

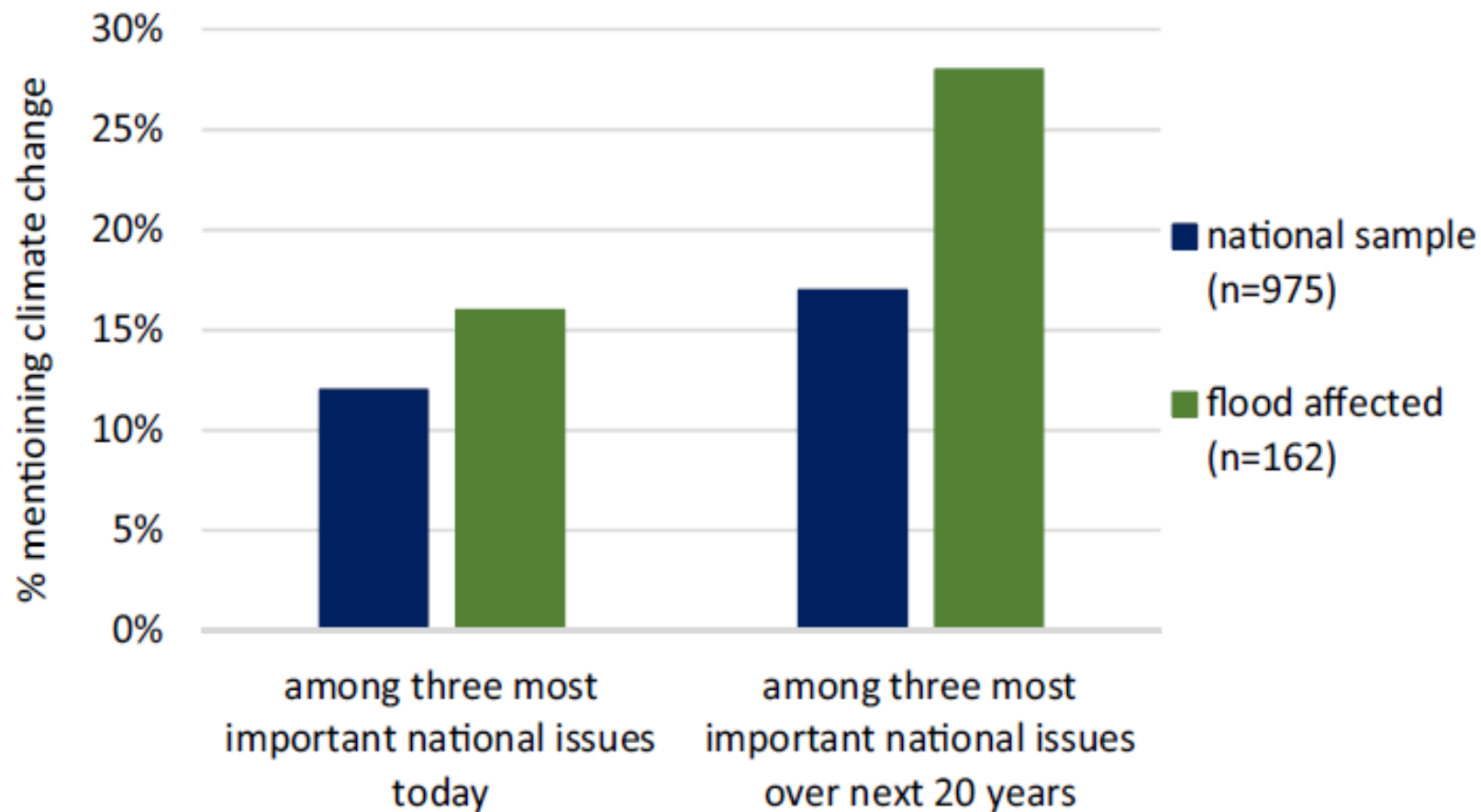
Imagining

EXPERIENTIAL

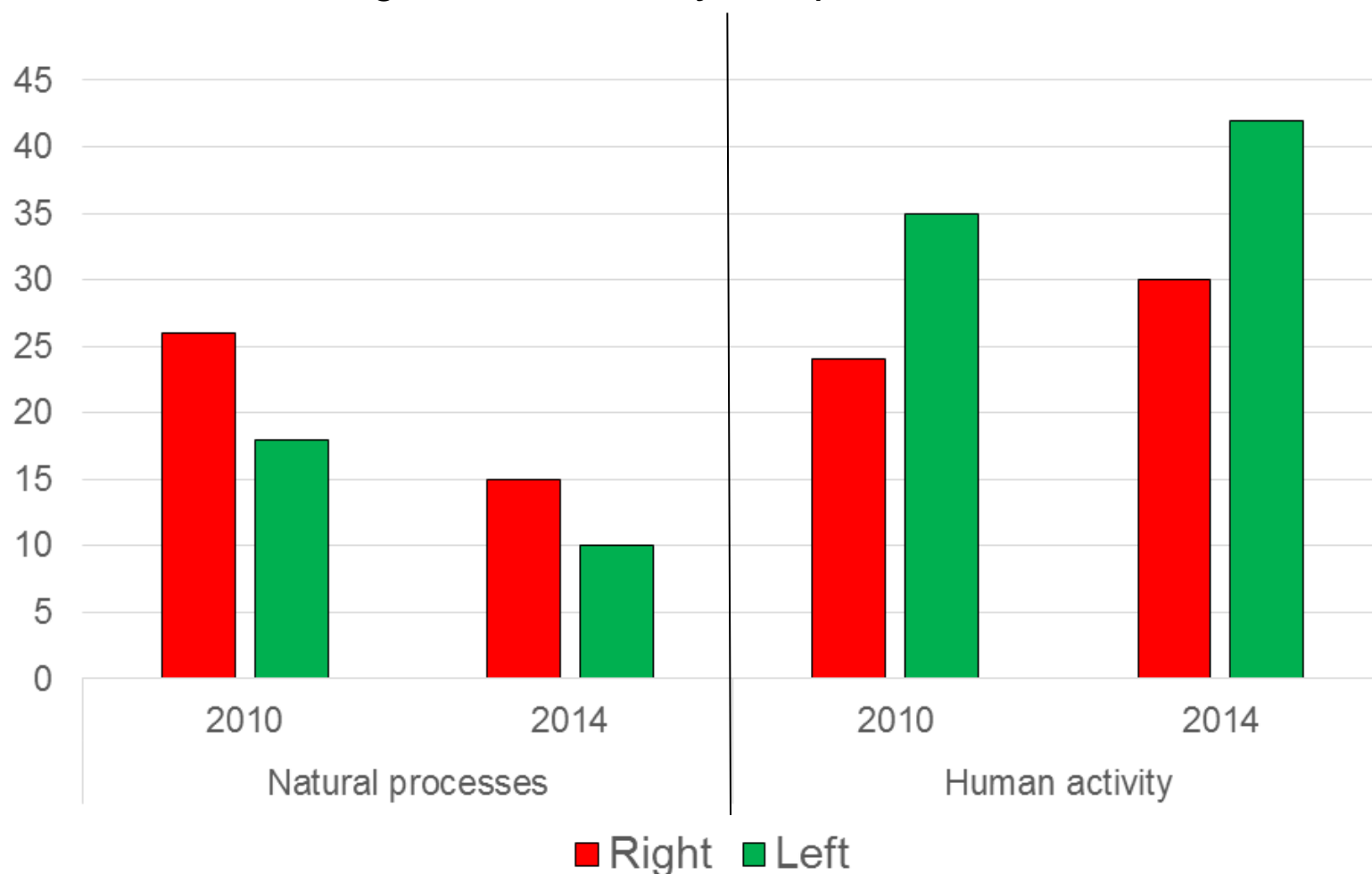
Experiencing

Abstract

Concrete



Which of the following best describes your opinion about the causes of CC?



- Is increase in scepticism due to *Issue Attention Cycle* or *Climate Fatigue*?

