

A Real Polêmica: An Approach to Scientific Controversy and its Uncertain Reach

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Polemic

po·lem·ic

/pə'lemik/ 

noun

1. a strong verbal or written attack on
"his polemic against the cultural re
synonyms: [diatribe](#), [invective](#), [rant](#),
[condemnation](#), [criticism](#)

adjective

1. another term for [polemical](#).



Translations, word origin, and more definitions

Google Translation

Polêmica

- É a prática de provocar disputas e causar controvérsias em diversos campos discursivos, como na filosofia, na política, literatura etc.

CONTROVERSY...in religion, politics, art, literature, etc

And often *just* controversy



ZIKA VIRUS

There are many suspected cases of Zika Virus in Brazil.

Binding the two

- This talk is a roadmap for perhaps one might attempt to bind the two:
 - *Polêmica* of a science controversy with the polemic ways in which it is expressed...extending from the same root? Or totally unrelated?

"You know, back in the '70s — I remember the '70s, we were told there was global cooling. And everyone was told global cooling was a really big problem. ... The problem with climate change is there's never been a day in the history of the world in which the climate is not changing."



"There is no connection between microcephaly and Zika virus. There's nothing to put them together. It's like the CDC and WHO want to make something up to scare women from having children."

Trajectory

- Adaptation and vulnerability work
- Climate change perceptions
- Science controversies and the role of media influence



Adaptation
...and vulnerability



Perceptions
Specifically
climate change



Science
controversies
Media influence

Project origin

Driven by “wicked problems” (intractable scientific controversies)

- involve controversy among stakeholders
- divided opinions among citizens
- limit the ability of government to enact and apply effective solutions.

NSF PI'd under Deserai with collaboration from CSTPR affiliates



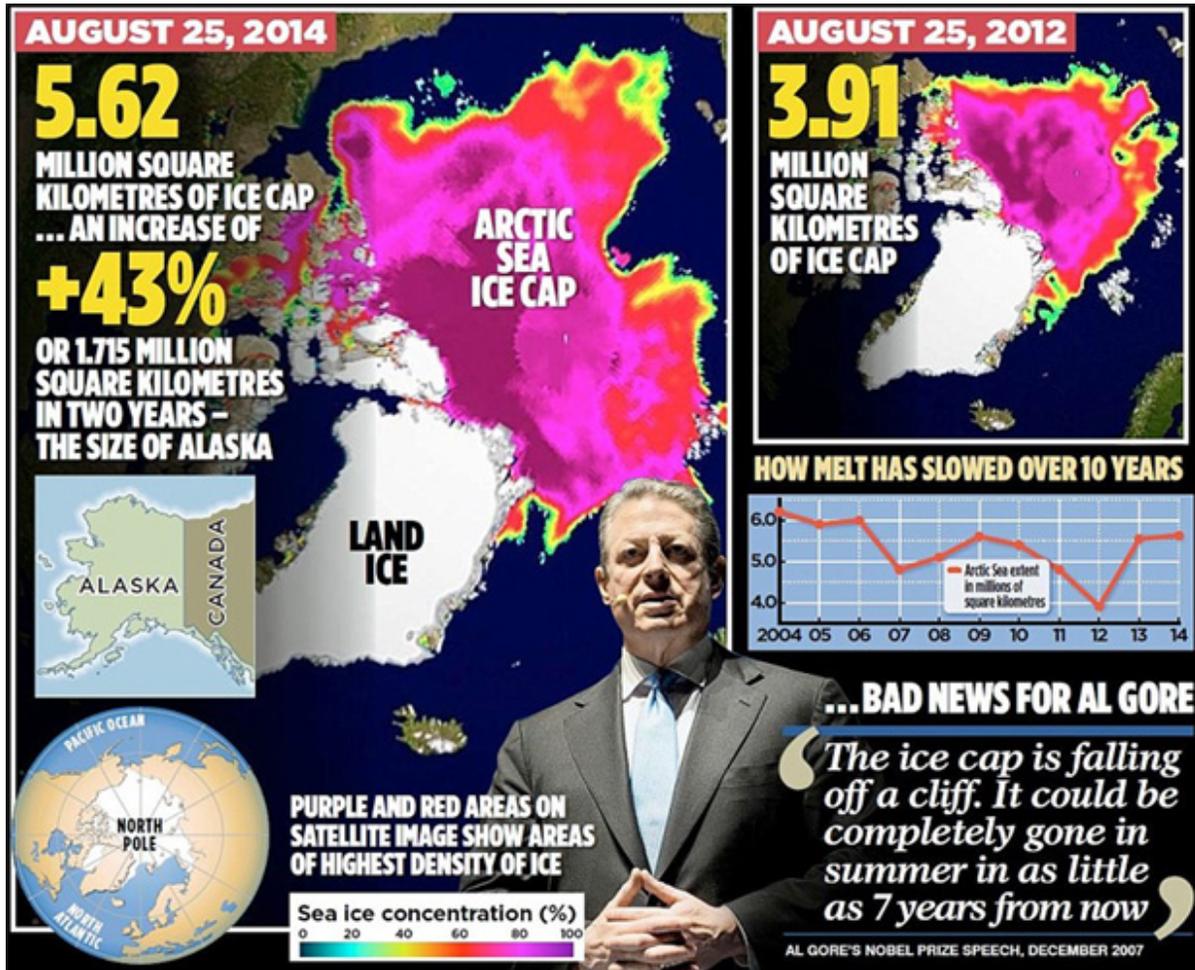
Medial-length issues that could be resolved with further inquiry but have not for whatever reason.

Short-term that are seemingly resolved quickly



Long-term that seemingly will never be resolved (or "agreed upon")

Geoffrey Grider (nowtheendbegins.com)



WORLD HEALTH ORGANIZATION
FLU VACCINE PLAYSET
CREATE AUTISM AND 27 DISEASES!
VACCINATE YOUR PARENTS

PLAYSET INCLUDES:
5 REAL SYRINGES
30 VIALS OF LIVE SERUM
30 NON-LIABILITY FORMS
VACCINE CLINIC PLAYHOUSE

Vaccine Serum Contains Mercury, Squalene, Aluminum, Formaldehyde, Live Cancer Viruses, MSG

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In our own wickedness we are interested in

What are:

(1) the drivers of social constructions and public opinion related to contentious areas under scientific inquiry,

and

(2) the degree to which social constructions, public opinion, science (or scientists), or political factors play a greater or lesser roles in promoting or preventing policy change to solve these problems.

Intended objectives

- **To understand**

- **Objective 1.** How contested scientific issues are constructed in the public sphere.
- **Objective 2.** The connection between social constructions of contested scientific issues, the actual experiences of those issues that individuals understand, and public opinion related to the same issues.
- **Objective 3.** The relationship between opinions held by citizens and the policies decisions of legislatures.

How hard the challenge truly is

$$\begin{aligned}
 R_{6,WL}^{(2)}(u_1, u_2, u_3) = & \quad (H.1) \\
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 \end{aligned}$$

Questions

The second one

The degree to which social constructions, public opinion, science (or scientists), or political factors such as focusing events, play greater or lesser roles in promoting policy change to solve these problems

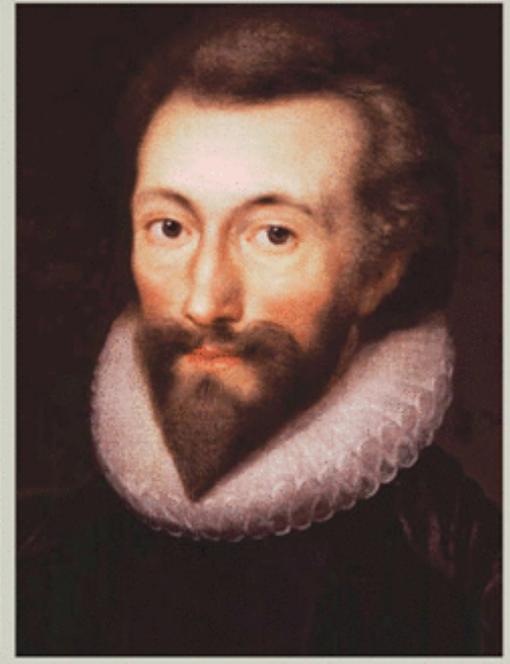
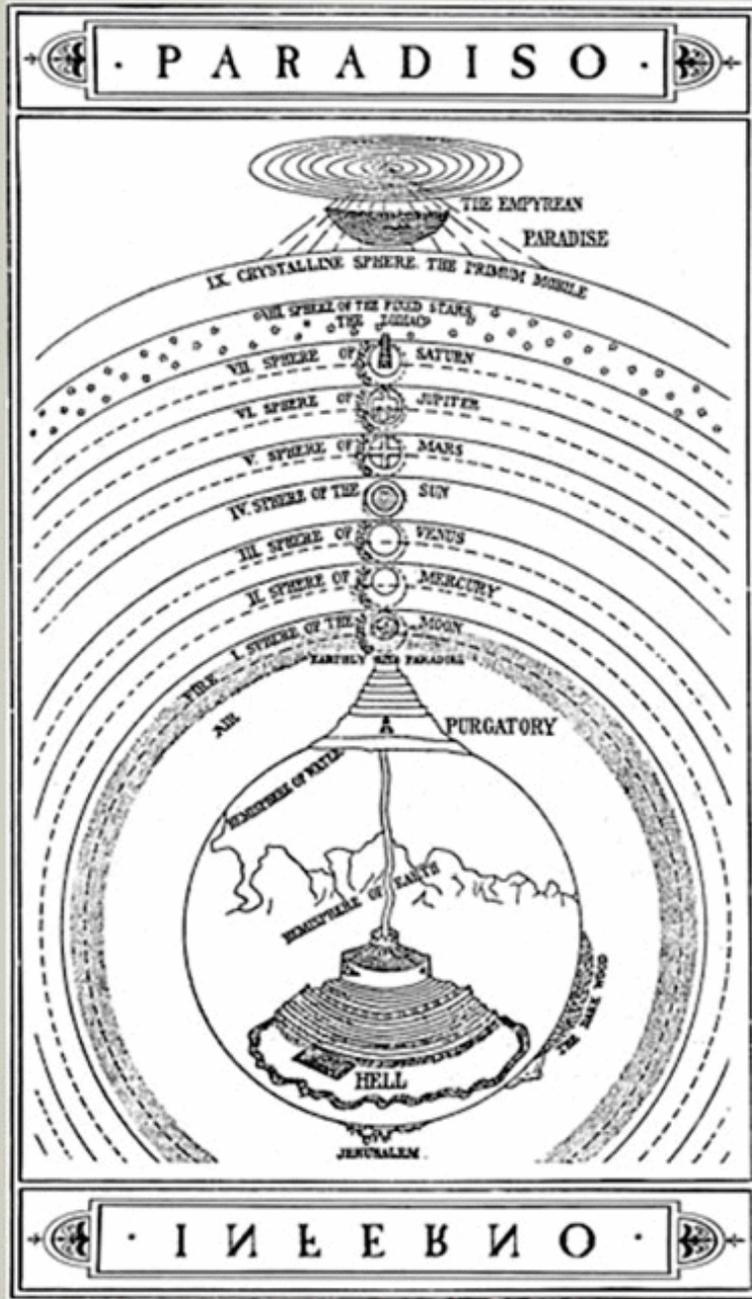
Getting a sense of the social dimensions of scientific issues, drawing from various social science fields such as political science and public policy, and subsequently propose to link those social constructions to policy outcomes

Literature

Science, Technology & Society (STS) frameworks to investigate how two science controversies – climate change and childhood vaccine adoption – are socially constructed, how public opinion is formed around these issues, and how these processes and outcomes are linked to policy decisions in U.S. states.

But what is a scientific controversy?

- Simply disagreements among practitioners of a given science regarding some aspect of their practice?
- Disagreements over the way to tackle a given problem or puzzle, or what the solution to that puzzle is?
- Or is it a disagreement about shared assumptions
 - As Baltas (2000) noted, unless some aspect of the assumption is resolved to the satisfaction of the other part or parties
 - It has to effectively be disclosed



How to frame scientific controversies and relevance to policy?

- Concerted sociological efforts from the 1960s and 1970s to construe meaning and durability of scientific controversies (Nowotny, 1975; Ross, 1971; Van DenDaele, 1977).
- Questions of how and why scientists become embroiled in controversy, why the public (or specific publics) perceive controversies, and the interplay between the scientific community and nonscientists have driven much STS scholarship (Landström, Hauxwell-Baldwin, Lorenzoni, & Rogers-Hayden, 2015; Merton, 1957; Sismondo, 2011).
- Public policy and political science scholarship has frequently sought to understand the role of science, advocates, and public opinion in the policy process (Sabatier & Jenkins-Smith, 1999a; Sabatier & Jenkins-Smith, 1993; Sabatier & Weible, 2007).

- The role of science, as an agent or an actant, has evolved in various iterations of the discipline.
 - This conceptualization did not leave extensive room for considering diverse social constructions of scientific knowledge.

By the 1960s, de Solla Price (1963) and others saw merit in the use of quantitative scientific metrics, particularly in measuring citations of scientific works

- Thus, a dichotomy formed between qualitative and quantitative assessment of science and its impacts

- Proposed research seeks to explain controversies in science, while also emphasizing the process of "doing" and "creating" science.
 - With a fuller understanding of the interplay between science and society within the two cases analyzed in this proposed project, we contend that our research design can help untangle how controversies are constructed, which can be applied to other controversial science issues

Medialization

- Scientific research provides a steady stream of information to the media, and because a minuscule amount is newsworthy according to media production values, the resulting product is *medialized* (Altheide & Snow, 1988; Sarcinelli, 1998; Schulz, 2004).
- Social reality of what is construed as science prior to medialization, however, is often perpetuated by scientific projects
 - promoting scientific agendas, legitimating projects, and encouraging further funding.
- As Weingarten (2012) observes, this coupling substantiates dependencies between media and scientific "systems" (epistemes), even if their constructions of scientific phenomena are seemingly at odds.

(a) for scientists and by scientists and

(b) for the public by scientists or journalists, are interactive independent of their epistemic differences.

- Suggests that scientific controversies may lend themselves to media controversies, which in turn may encourage further scientific controversies independent of their actual magnitude and breadth.

Social construct

- Social construct
- (a) science and technology
- (b) scientists as a
- (c) science and technology
ideas about nature
- (d) science and technology
- We don't hold a
"Strong form" of
of scientific knowledge
shared commitment
(Hacking, 1999)
- Apprehension of
production of it
 - integral to our
that influence



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make up the body
through the
the natural world

ne a continuous
ne various processes

Initial proposal idea

- Proposed idea is to adapt U.S. state-level social constructions and policymaking using the cases of climate change and childhood vaccines
 - Will take a slight turn here for a Brazilian case



- First, social construction of case study issues will be analyzed at the U.S. state-level
 - (a) analysis of statewide news coverage,
 - (b) measures of focusing events as evident in news and social media, and
 - (c) non-mediated social constructions measured in social media
- Second, social construction data will be compared with state-level
 - (a) political
 - (b) socioeconomic
 - (c) physical data (measures of local climate conditions or vaccine/disease rates)

Use public opinion data to understand whether social construction of issues or other socio-political factors are more influential

- Finally, the first two stages of data collection and analysis will inform the third stage of the project wherein we analyze
 - (a) interviews with key state legislators
 - (b) state-level policy data,
 - (c) surveys with policymakers and staff to understand the influences of social construction of issues and public opinion on policy debates and actions taken by states.

Variable	Definition	Measurement
Contested science	Disputes among scientists and between scientists and lay people that seek to appeal to fact (Englehardt & Caplan, 1987).	<ul style="list-style-type: none"> • Presence or absence of conflicting framing of issue in public sphere.
Public Opinion	Shared beliefs about issues, their importance, or the appropriate solutions to problems (Zaller, 1992).	<ul style="list-style-type: none"> • Public opinion polling using consistent question format over time, among representative populations.
Social Constructions	Creation of shared understandings and opinions about issues, the influence of social forces on knowledge and the creation of knowledge (Boghossian, 2001).	<ul style="list-style-type: none"> • Media framing of issues. • Non-mediated discussions of issues. • Actors represented as influential or knowledgeable in media and public discussions.
Policy Outcomes	Decisions to adopt, enact, or reject a proposed policy within a governmental decision body (Lasswell, 1970), or a law, program, or regulation adopted with the goal of solving a problem (Kingdon, 2003).	<ul style="list-style-type: none"> • Decisions made within governmental bodies to adopt a policy or reject a policy. • Debates within governmental bodies that do not lead to a formal policy proposal or decision.

Climate change

- Anthropogenic climate change (CC) is an issue-area where significant scientific evidence and consensus exists amongst relevant experts...yet CC is currently one of the most controversial arenas in U.S. policymaking even post Paris 2015
- Policy aimed at mitigating CC or its effects in the U.S. has not changed dramatically at the national level, which has received the bulk of scholarly and public attention (at least in ink spilled [Yale PCCC 2016])
 - U.S. national and state-level policy debates have often centered on the validity of the science underlying CC predictions (Dryzek, Norgaard, & Schlosberg, 2011)
- Much of the inaction on greenhouse gas reductions and CC adaptation also have to do with economic considerations--policy action is frequently stymied by the perceived economic costs of action to government and industry
- Social constructions of CC can be reliably measured using news and social media content--important contributors to the dialogue of CC and policymaking, particularly surrounding the science, politics, and anthropogenic nature of CC

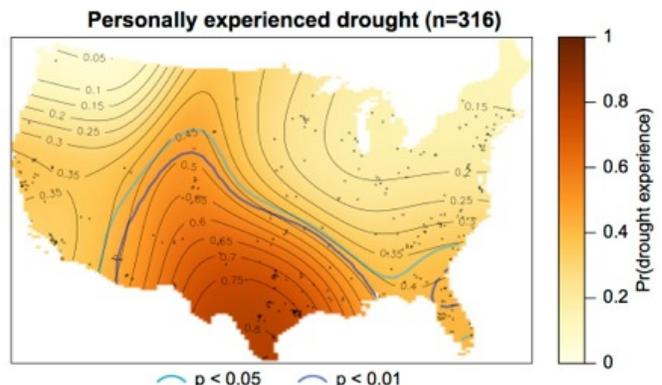
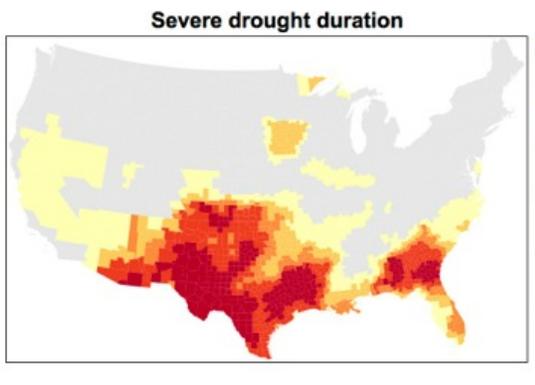
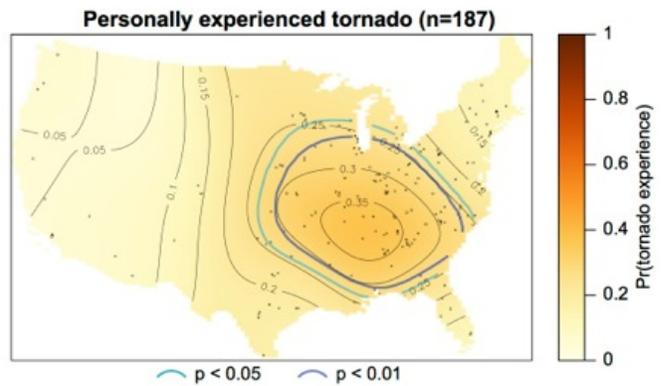
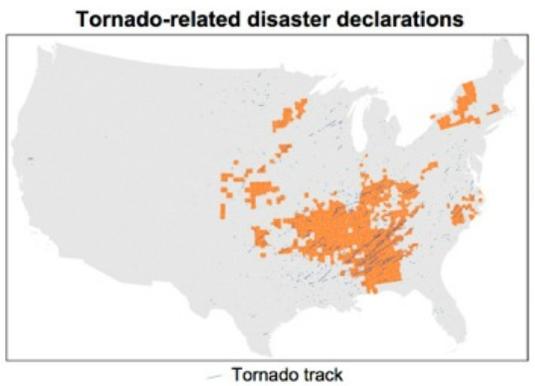
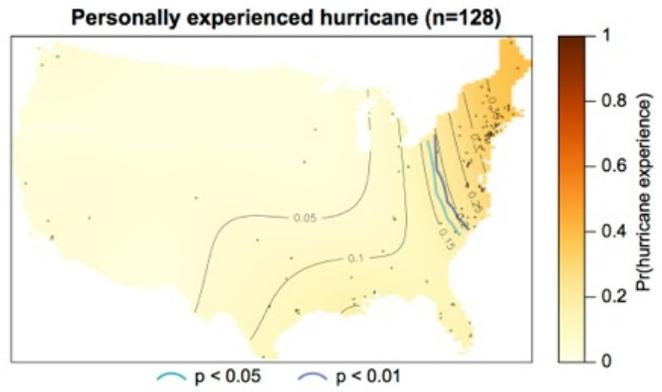
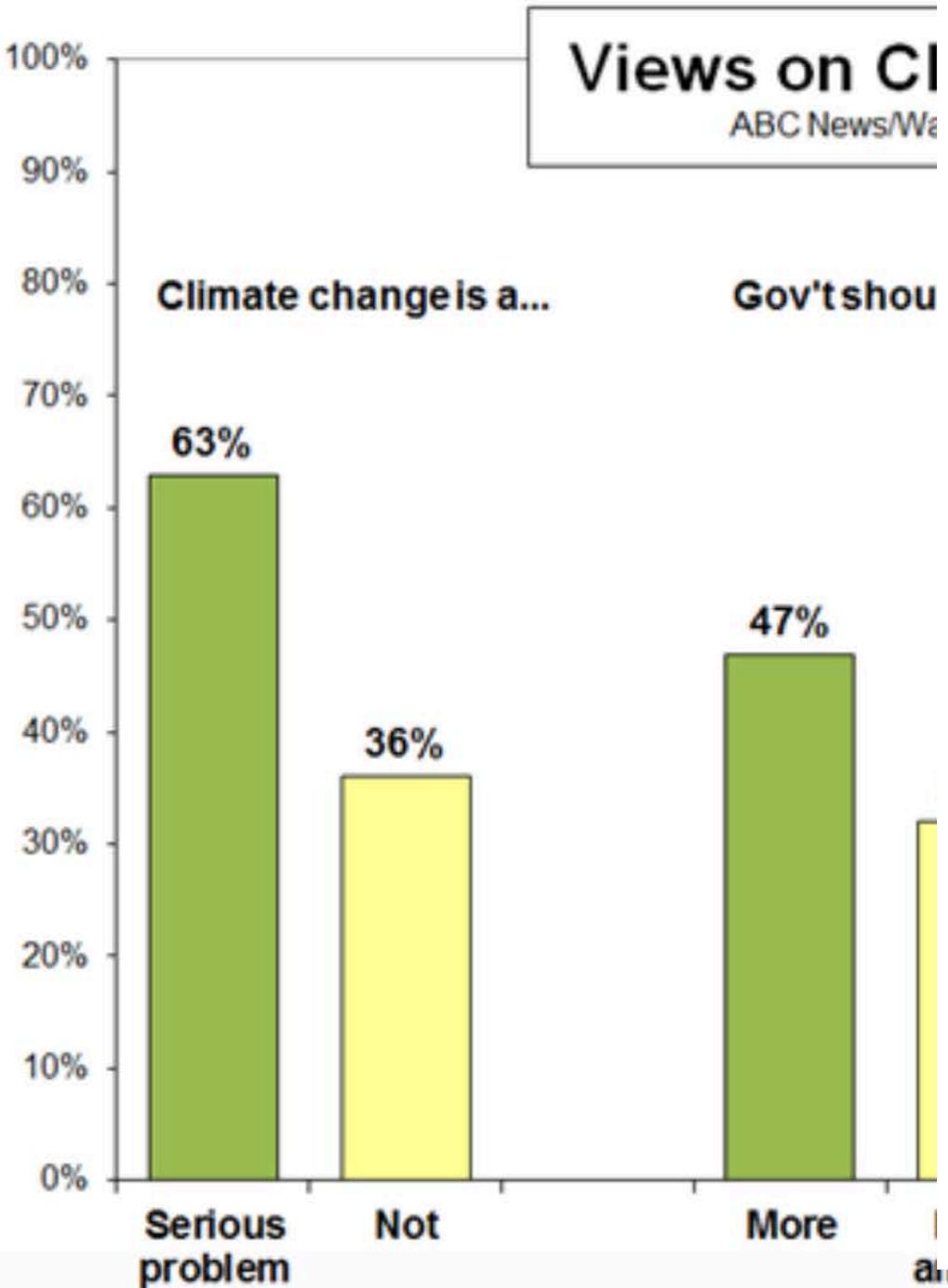
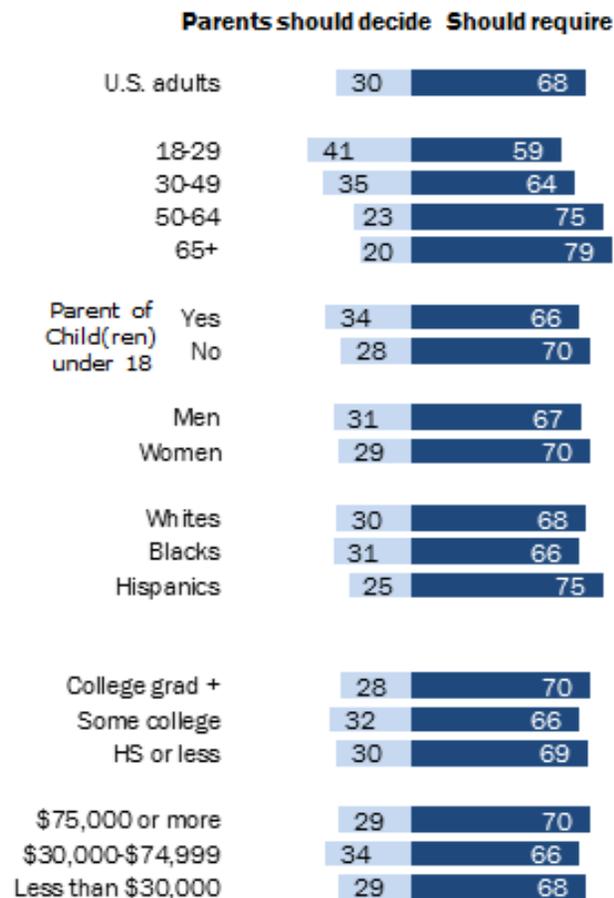


Fig. 1 Spatial distribution of recorded extreme weather events (left) and reported personal experience (right)

Younger Groups Less Supportive of Mandatory Childhood Vaccinations

% of U.S. adults who say parents should be able to decide not to vaccinate their children or that all children should be required to be vaccinated

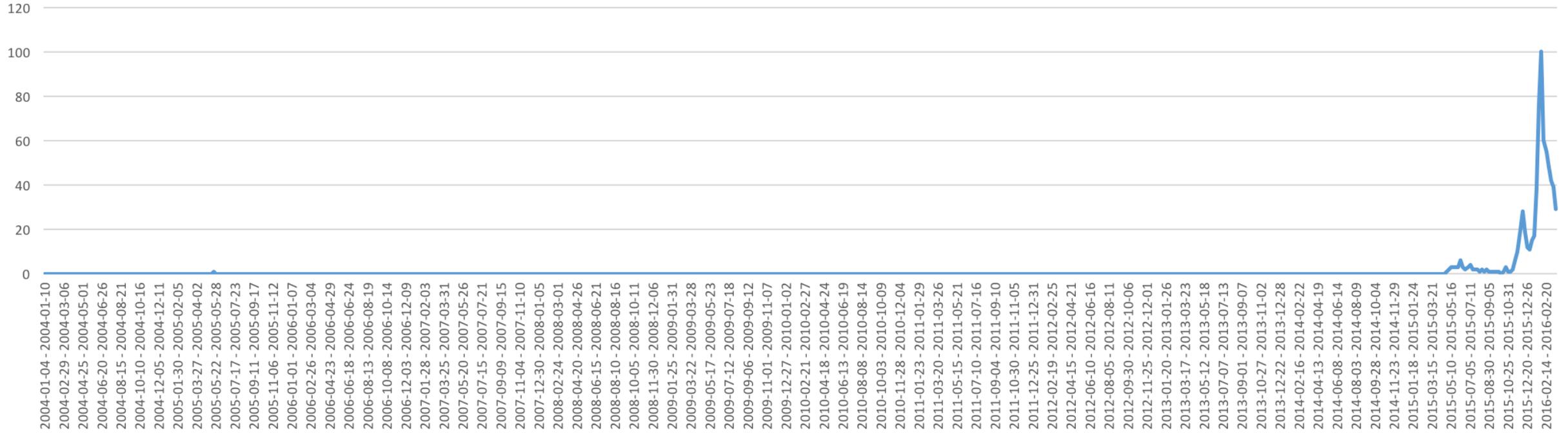


Survey of U.S. adults August 15-25, 2014. Q25. Those saying "don't know" or "giving no answer" are not shown. Whites and blacks include only non-Hispanics; Hispanics are of any race.

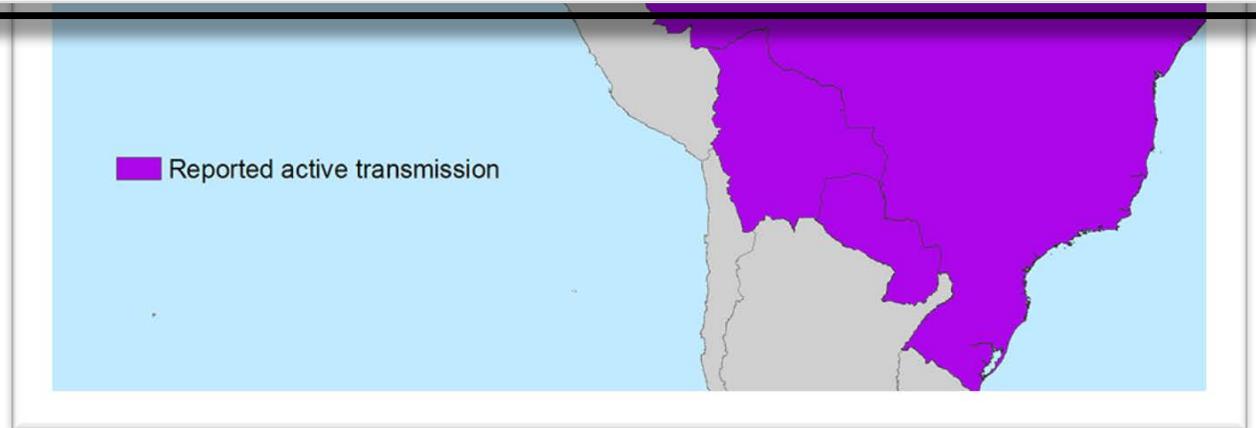
Childhood vaccine adoption

- Childhood vaccines are widely accepted in the medical community as safe and effective for preventing disease (Gust, Darling, Kennedy, & Schwartz, 2008)
- Global pandemics such as smallpox, polio, pertussis, and diphtheria have either been eradicated from much of the world, or have become less prevalent as a result of widespread adoption of childhood vaccines (Conis, 2014)
- Vaccination safety in the U.S. has been registered as a public concern since the late 1990s, when medical literature appeared to indicate that a relationship existed between autism and the Measels-Mumps-Rubella (MMR) vaccine (Wakefield, 1999)
 - The so-called "thimerosal scare," which focused on childhood vaccine safety, has resurfaced in recent years with increasing anxiety about immunizations beyond only the MMR (Conis, 2014).
 - CDC= number of cases of individuals with measles quadrupled in 2014 due to lower childhood vaccination rates in areas of the U.S., with the majority of parents who opted-out of vaccinations stating that their choice was based on fears of vaccine safety, or due to religious beliefs

virus de zika



- fever, rash, joint pain, and conjunctivitis (red eyes).
- Linked to microcephaly and Guillain-Barré syndrome



But it to has faced a level of controversy



Microcefalia: governo e sete estados divergem sobre casos confirmados

por JULIANA DAL PIVA

cotidiano

aedes rio tragédia rio doce zoneamento crise da água

BBC BRASIL

Brasil pode protagonizar 'escândalo global', diz professor da USP sobre zika

Leo Correa - 22 Jan 2016/Associated Press



Professor da USP diz que não há evidências suficientes para mostrar relação entre zika e microcefalia

RUTH COSTAS
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Exagerado

A informação está no caminho correto, mas houve exagero

leia também

Superterça: o que você precisa saber sobre rodada decisiva das prévias nos EUA

aedes aegypti

DENGUE | ZIKA | COMO COMBATER



Confira o raio-X do mosquito aedes

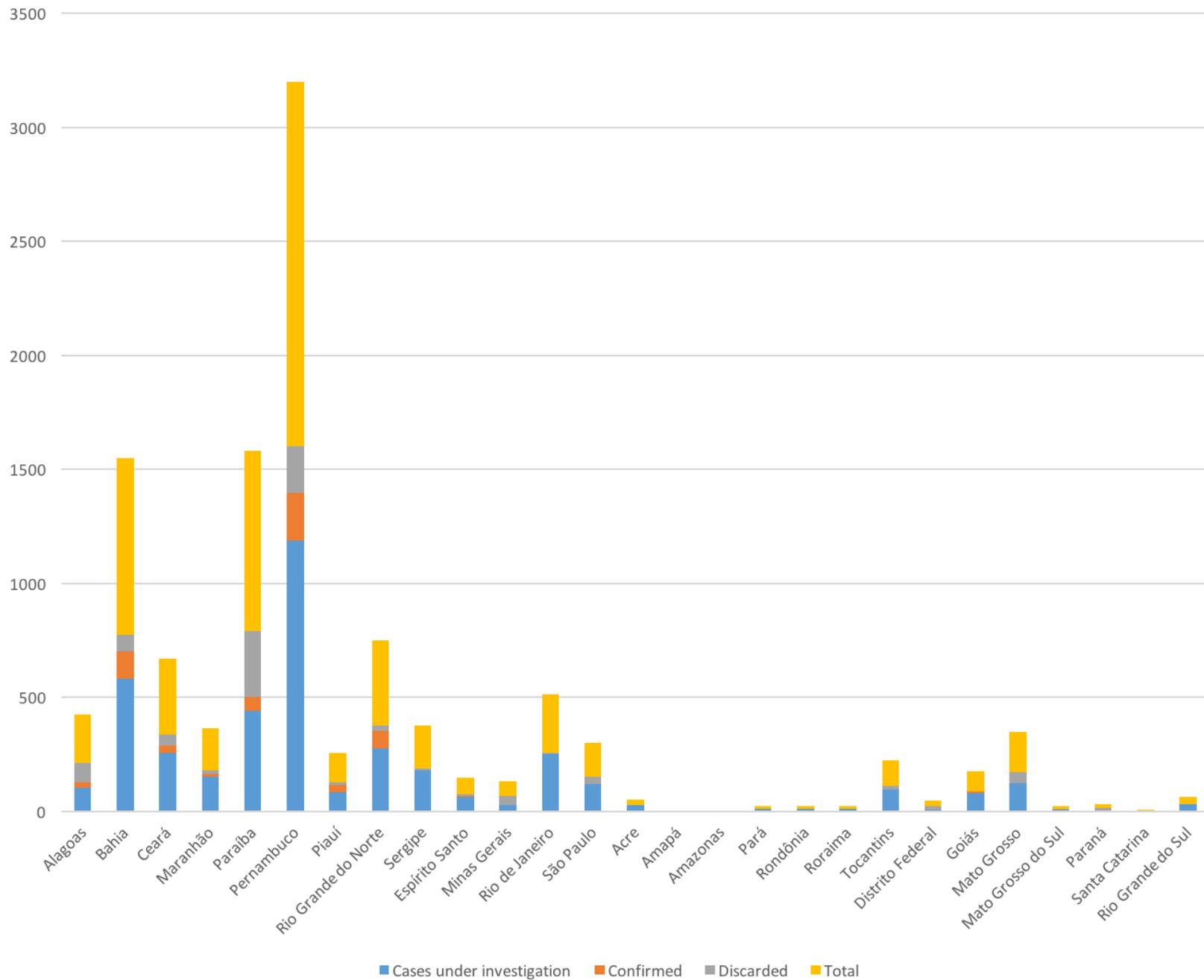
crise da água

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FIM DA CRISE HIDRICA EM SP

Zika cases in Brazil by state



Methods and analysis



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- Social construction data will include news coverage of the issue appearing in statewide newspapers between the years 2005-2015 accessed from Lexis-Nexis and Proquest Newspaper Database
- Social media downloaded from Twitter, Google Analytics, and publicly available Facebook content between 2005-2016

Card number	Title	Brief reminder incident/evidence
Card 10	PORCELLI'S ROLE/STATUS	
Para. 1	local transport agent	
Para. 4	engaged in reciprocal political relationships	
Para. 8	intimidates some locals: eg lorry drivers	
Para. 11	reciprocal economic enterprises	
Para. 16	excessive influence with police; eg incident of police inspector	
Para. 27	makes counter-announcements to the factory announcements	

Location in field notes -----

Cross-references ----- Links with: Card 14, Card 36 See also Card 44 ?

Social Construction Frame	Media Codebook Examples	Analysis
Anthropogenic climate change is an existential threat	"crisis" NEAR "climate change" NEAR "opportunity" NEAR "anthropogenic"	Initial latent Dirichlet allocation (LDA) coding using the dictionary method and automapping
Anthropogenic climate change is debatable	"climate change" NEAR "controversial" NEAR "debate" NEAR "consensus"	Same
Anthropogenic climate change is false	"climate change" NEAR "hoax" NEAR "conspiracy"	Same

Public opinion

- Tie social constructions of case issues established in the previous stage with socio-political data:
 - (1) public opinion data from secondary sources, including Gallup, the Yale Project on Climate Change, and the Pew Research Center for the People and the Press
 - (2) proximate physical data for each case including: (a) climate conditions, extreme events, and daily weather patterns in the U.S. states from the National Ocean and Atmospheric Administration and the U.S. Geological Survey; and (b) vaccine adoption and disease outbreaks in the state populations from the Centers for Disease Control and Prevention
 - (3) socio-political data of each state, including registered voter affiliations, presidential election outcomes from elections between 2005-2015, electoral representation (including state legislatures, governors, and Congress), and socioeconomic data (US Census)

Policy data

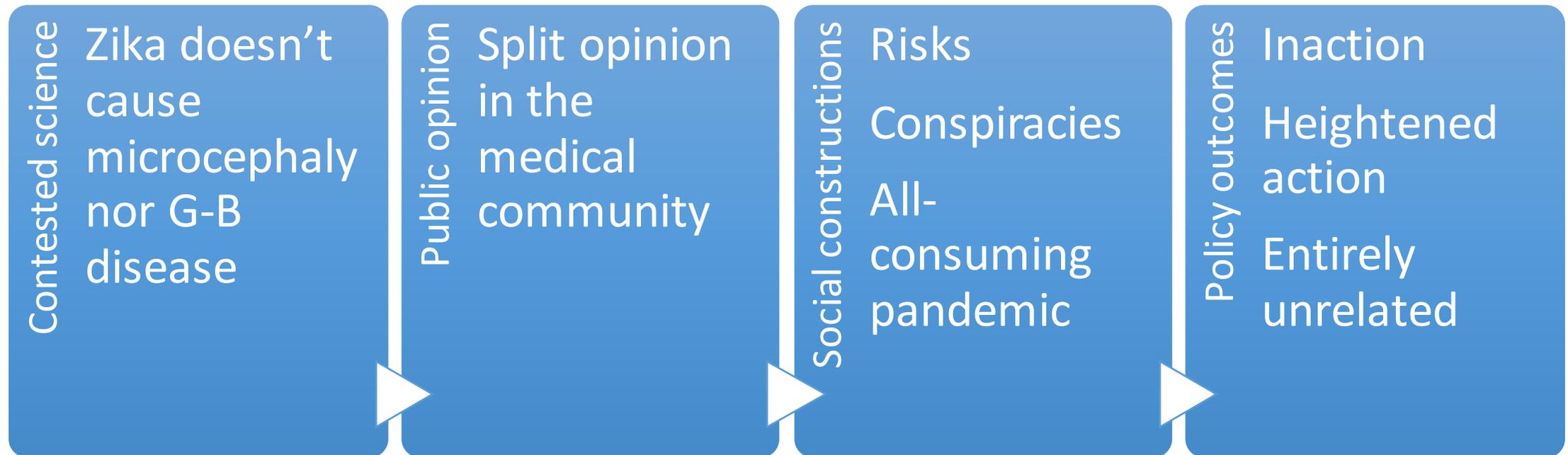
- The final stage of the project will analyze whether social constructions, socio-political factors, public opinion, or other variables influence policy outcomes in U.S. states in the two case study issues.
 - Data from the prior two stages of research will be combined with the following three sources of data:
 1. state-level policymaking data gathered from the National Conference of State Legislatures and individual states to measure the type and extent of policy debate and action related to climate change or childhood vaccine adoption within each state
 2. in-depth semistructured interviews with key legislators and staff from selected states (n~20) focused on the policy issues, influential policy factors, and the role of the hypothesized variables included in this study
 3. a survey of all legislators from the 50 states conducted to broaden the qualitative findings from interviews and to measure perceptions of policy influences such as advocates, media, public opinion/citizens, science/scientists, focusing events, and state economic factors (dominant industries, economic health, etc.).

- Documents, interviews, and survey data
- In-depth interviews transcribed verbatim and coded using established qualitative coding procedures (Miles, Huberman, & Saldaña, 2013)
- Codebook will break down complex text into variables of analysis :
 - social constructions (dialogue, debates, understandings of issues mentioned by subjects)
 - public opinion
 - focusing events and other proximate state-level experiences with the case study issues
 - political conditions
 - science
 - elite actors
 - and policy decisions

Supercode 1: Social Constructions	SOCCON – Mention of understandings, discussion, or awareness of case study issue within the state.
Subcode 1: Media Constructions	MEDIA – Mention news media coverage of the issue or corollary effects or perceptions of the issue.
Subcode 2: Social Media Constructions	SOCIAL – Mention of discussion, debate, or coverage of the issue in social media, including the corollary effects or perceptions of the issue.

- Policy data broken down for hand coding and statistical analysis
- Policy documents (legislation and executive orders) will be coded to focus on variables such as:
 - (a) topic of discussion
 - (b) type of policy (increased regulation, decreased regulation, tax incentives, executive orders, etc.)
 - (c) passage or failure of policy
 - (d) date of policy introduction and passage

Model example—using Zika in Brazil



Avaliação do Tópico: ★★★★★

A Farsa do Zika Vírus: Microcefalia ligada à larvicida na água

Modo de Listagem | Modo Linear

11-02-2016, 06:21 PM

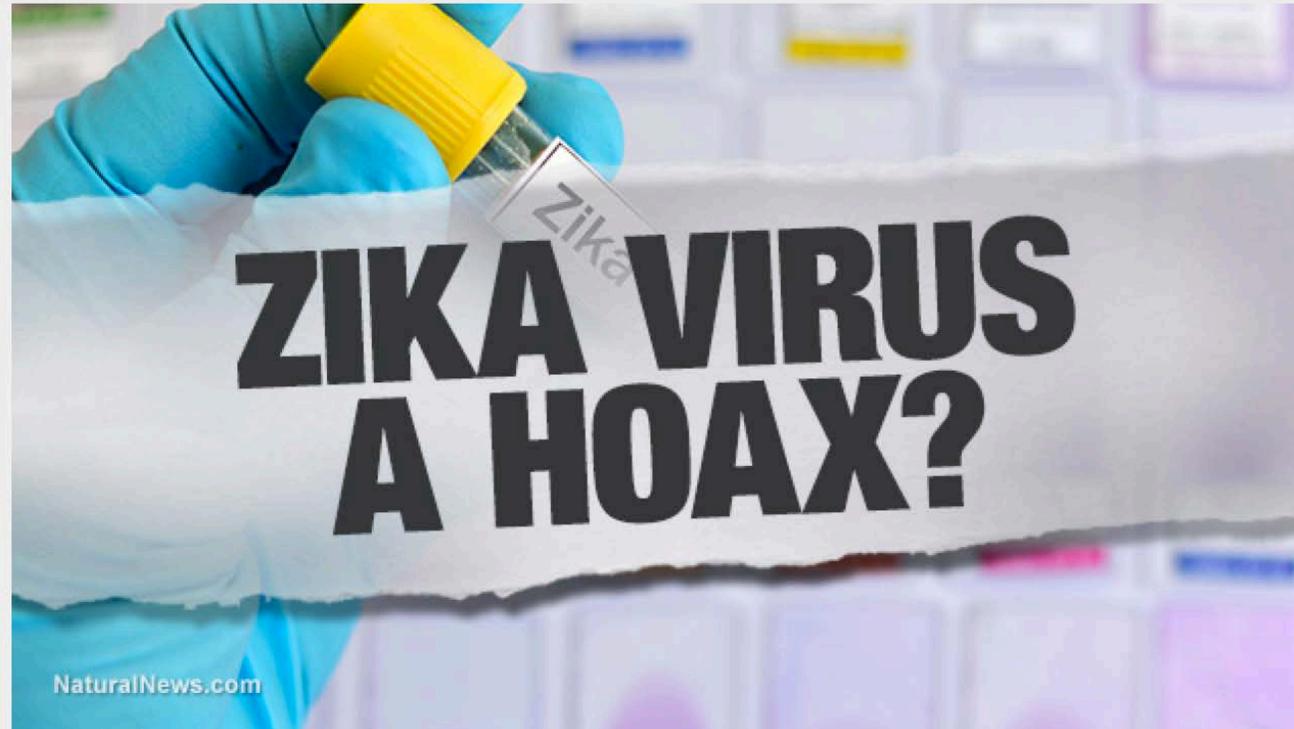
Resposta: #1



Mediator 
Super Moderator
★★★★★

Respostas: 1,333
Agradecimentos feitos:
24010
Agradecimentos recebidos:
6082 em 1252 posts
Registrado em: Aug 2013
Reputação: **51**

! A Farsa do Zika Vírus: Microcefalia ligada à larvicida na água



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Porqu

Grávidas que tiveram zika deveriam ter o direito de fazer aborto?

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BBC BRASIL

Brasil pode protagonizar 'escândalo global', diz professor da USP sobre zika

Leo Correa - 22 Jan. 2016/Associated Press



Professor da USP diz que não há evidências suficientes para mostrar relação entre zika e microcefalia

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Superterça:
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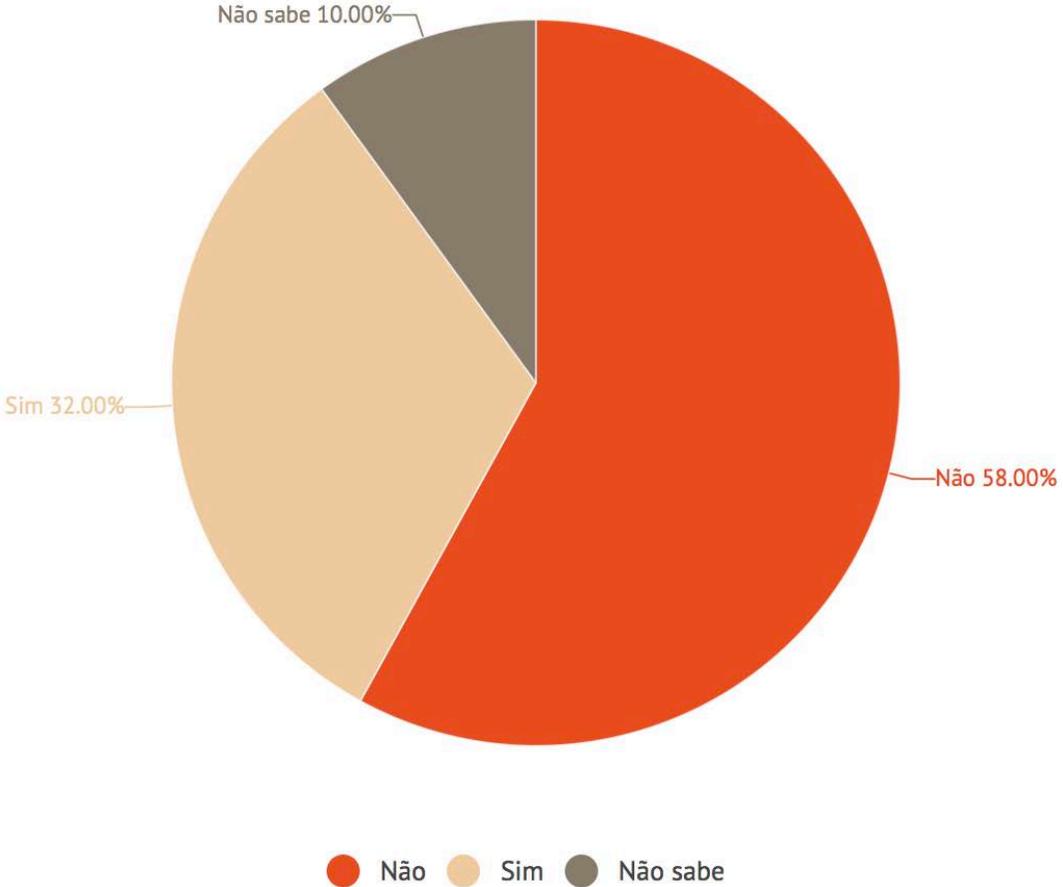
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Médico phd faz denuncia alarmante: "Microce causada pelo Zika ví vacinas vencidas"

Socialize It → | Tweet

Autor do estudo: Dr. Plínio Bezerra dos Santos Filho, PhD. R Ministério Público. Vale a pena conferir.



omy/-7UlsI-PGBGk/VrgU71uyVgl/AAAAAAAJR8/_1zBS78qCeE/s1600/vacinas-vencidas

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Mundo Educação » Doenças » Doenças virais » [Diferenças entre a Dengue, Chik](#)

Diferenças entre a Dengue, Chikungunya e Zika

As principais diferenças entre a Dengue, a Chikungunya e a Zika estão na intensidade dos sintomas. Entre essas doenças, a dengue é a mais grave.

Publicado por: Vanessa Sardinha dos Santos em Doenças virais

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O mosquito do gênero Aedes é responsável por transmitir diversas enfermidades



Acknowledgements

- Deserai Anderson Crow
- Center for Science and Technology Policy Research
- Center for Environmental Journalism
- Environmental Studies Program
- Federal University of Amazonas—Postgraduate Program in Amazonian Society and Culture