

Reflections on

Community Communications for Climate Adaptation and Preparedness

through information and communication technologies



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Description at <https://lesandrop.github.io/site/opinion/Lesandro-LSD-PSVS-Talk-Description.pdf>



Climate.
Technology.
People.
Us.



Belo Horizonte/MG Brazil



npj | climate action

www.nature.com/npjclimataction

ARTICLE OPEN



How citizens engage with the social media presence of climate authorities: the case of five Brazilian cities

Lesandro Ponciano ^{1,2,3*}

Citizen-government communication is essential in preparedness and adaptation to climate events. Local-level government authorities have sought to communicate via social media, but little is known about their communication strategies and citizens' participation in replying to their publications. This study draws on conceptual frameworks for Social Media Presence and Human Engagement to establish behavioural modelling and topic modelling approaches for assessing citizen-authority communication from a long-term perspective. Empirical analyses focus on official government authorities for the Brazilian cities of São Paulo, Rio de Janeiro, Belo Horizonte, Porto Alegre and Belém, which cover over 25 million people and 500 thousand followers on the X platform (former Twitter). Analyses are based on 10.2 thousand authorities' publications and their 5.5 thousand received replies from 2.6 thousand people over one year. Findings show that authorities use periodic passive posting, providing meteorological, hydrological, and geological alerts, forecasts, and momentary weather updates. Citizen engagement is short-term, providing corrections, additions, and updates but not connecting weather events with climate change. Practice-oriented implications concern the adequacy of social media for providing citizens awareness, keeping them updated, and building their trust in authorities over climate event developments.

npj Climate Action (2023)2:44 | <https://doi.org/10.1038/s44168-023-00080-3>

INTRODUCTION

Local-level climate authorities are essential actors in climate governance¹. They are established in cities, such as city hall departments or sectors, and form the lowest tier of employees that are closest to the population, as compared to the climate authorities established at the state or country level. Local-level climate authorities seek to reduce vulnerability and build climate resilience by implementing preparedness and adaptation actions^{2,3}. Preparedness actions are efforts taken in advance to

Despite the use and potential of social media platforms in preparedness activities and in spreading information about adaptation action, studies are needed to investigate what type of communications climate authorities have used in social media and how citizens behave when interacting with climate authorities on social media. Knowledge of these factors based on practical experience is relevant to understanding the characteristics of this type of citizen-authority communication. Because climate change is an unfolding phenomenon that is studied while actions are

#ClimateChange

Long-term shifts in temperatures and weather patterns

#ExtremeWeather

Unexpected, unusual, severe, or unseasonal weather

Extreme **drought** in the Amazon jungle



Extreme **flood** in Porto Alegre



MITIGATION

ADDRESS THE CAUSE

ADAPTATION

ADDRESS THE IMPACTS



Waste Reduction



Green Infrastructure

Sea Level Rise Protection



Sustainable Transportation



Water and Energy Conservation

Disaster Preparedness



RISK COMMUNICATION

Resilience



Building Electrification



Building Weatherization

Equip Communities for Extreme Weather



Smart Growth



Clean Energy

Restoration of Natural Areas

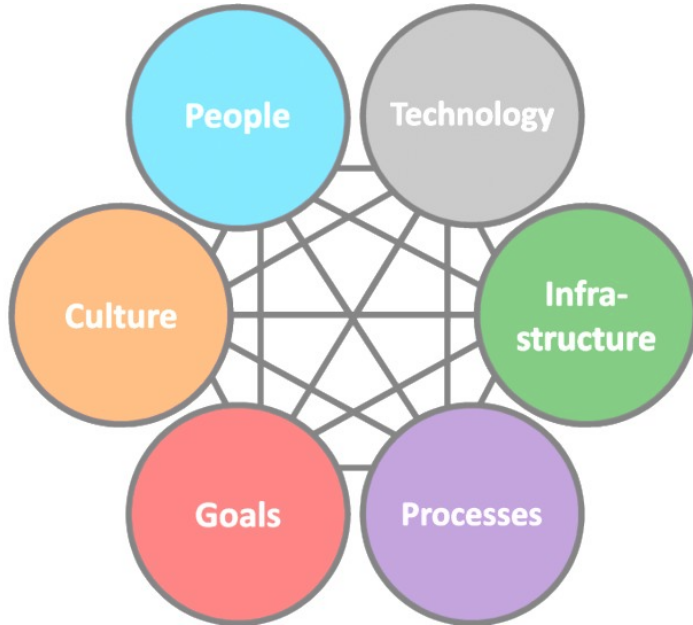


Socio-technical system

Cooperative system

Social media

Social network



Information and Communication Technology

*Which kind of adaptation and preparedness actions can **benefit** these technologies?*

*What **negative outcomes** can occur when these technologies are not used properly?*

Climate authorities



“Warning: Chance of heavy rain over the next 24 hours”

A weather alert poster for Olinda, PE. The background is dark blue with a rain pattern. At the top right, there is a white cloud and three blue raindrops. The main text is in large, bold letters: "ALERTA" in orange, "PARA POSSIBILIDADE DE CHUVAS FORTES" in white, and "NAS PRÓXIMAS 24 HORAS" in white. Below this, there is a white box with a blue border containing the text "DEFESA CIVIL" at the top, a stylized orange and blue house icon in the center, and "OLINDA - PE" at the bottom. To the right of this box, the text reads "Em situação de emergência acione a Defesa Civil". Below this, there are three orange rounded rectangles containing the phone numbers "0800 081 0060", "99266-5307" (with a WhatsApp icon), and "24h" (with "Ligação e WhatsApp" text). At the bottom left, there is a logo for "OLINDA PREFEITURA MUNICIPAL" with the tagline "MAIS CONQUISTAS PARA TODOS". At the bottom right, there is the website "olinda.pe.gov.br" and social media handles for Facebook and Twitter: "prefeituradeolinda" and "@pref_olinda".

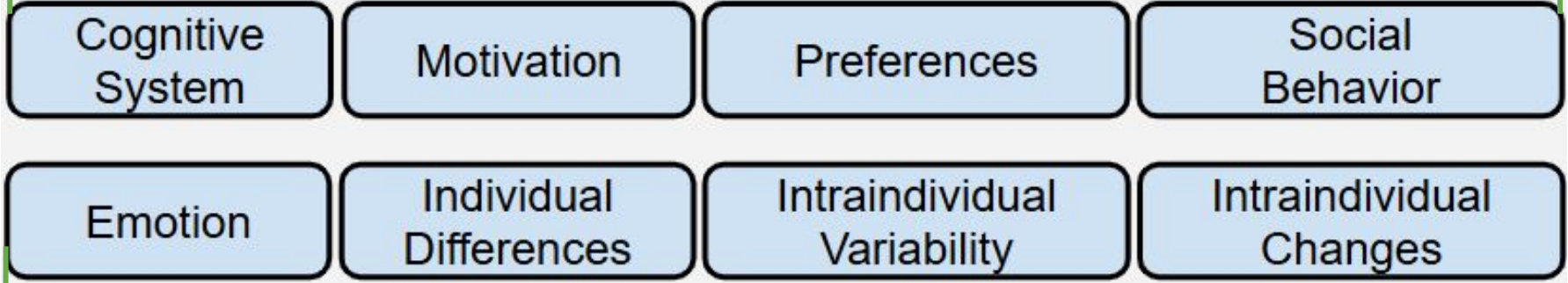
Multi-level governance

Social media inter-authority mention network in preparedness and climate warnings



■ Cognitive bias

Communities ■



Human aspects

■ Anxiety

COGNITION

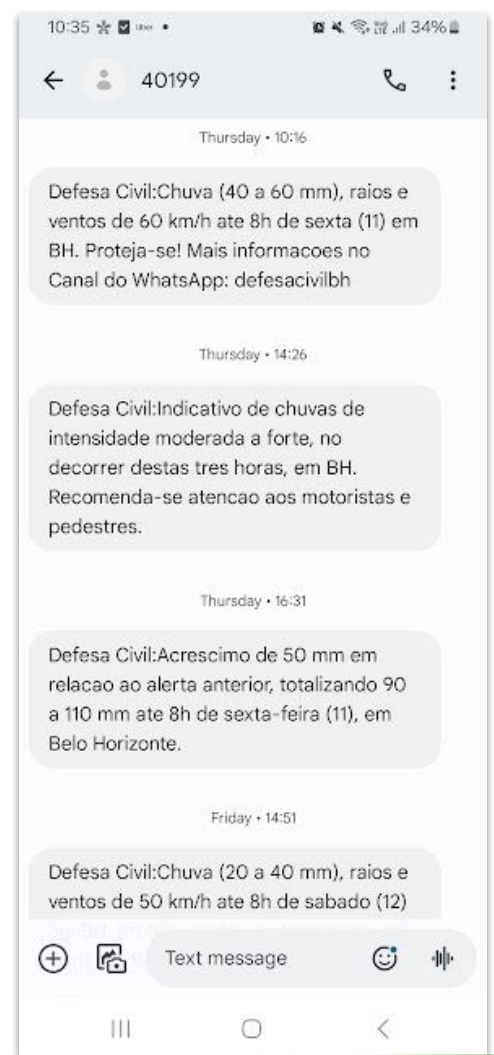
Normalcy (or normality) Bias

“belief that things will continue as they have in the past”

“the future will function in a similar manner to the past and present”

“underestimate the likelihood or impact of a potential hazard”

False Positive



Tarcísio diz que alertas por SMS antes da tragédia em São Sebastião não tiveram efetividade

O g1 revelou que o governo sabia dois dias antes do risco de tragédia na cidade, inclusive na área mais afetada, a Vila do Sahy, mas os avisos foram feitos apenas online.

Por Poliana Casemiro e Alice Aires, g1 Vale do Paraíba e Região

23/02/2023 14h09 · Atualizado há um ano



[Governor of the state of São Paulo] says that SMS alerts before the tragedy in São Sebastião were not effective

EMOTION

Climate Anxiety

Not always bad...

it can signal the approach of the climate change threat and motivate the person to take actions

... but can be can be really bad

when it is difficult to control and interfere in sleep, work and socialisation



uol Seu time Seu signo Jogos Eleições

Meio Ambiente

Crise climática cria ecoansiedade: 'Não saía da cama, tomei antidepressivo'

Heloísa Barrene • Do UOL, em São Paulo

22/06/2024 04h00



“Climate crisis creates eco-anxiety:
‘I couldn’t get out of bed, I took
antidepressants’”

“Climate anxiety: high temperatures, low humidity
and fires affect the mental health of residents of
the Federal District; see what to do”

g1 DISTRITO FEDERAL

Ansiedade climática: altas temperaturas, baixa umidade e queimadas afetam saúde mental de moradores do DF; veja o que fazer

Condições climáticas podem causar cansaço, mudanças no humor e aumento da ansiedade, diz especialista. Brasília enfrenta incêndios florestais e não chove há 149 dias; é a segunda pior estiagem da história da capital federal.

Por **Zaia Angelo**, g1 DF

19/09/2024 05h03 · Atualizado há 4 semanas

SOCIAL BEHAVIOUR

Communities

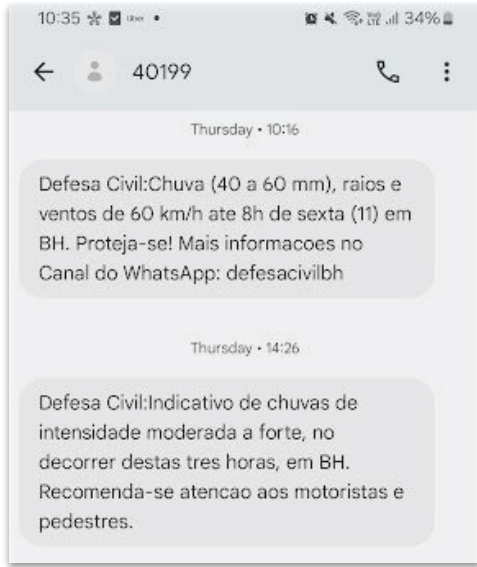
Self-organisation

Common interests

Fearing rain, residents of São Sebastião create an alternative warning system



The image is a screenshot of a news article from CNN Brasil. The top navigation bar is black with the CNN Brasil logo on the left and menu items: 'Ao vivo', 'Política', 'Economia', 'Esportes', and 'Pop'. The article title is 'Por medo da chuva, moradores de São Sebastião criam sistema de alerta alternativo'. The sub-headline reads: 'Trocadas de mensagens em aplicativo se intensificaram nas últimas 24 horas; ontem, sirene de alerta da Prefeitura foi acionada'. The source is 'Agência Brasil' and the timestamp is '25/01/2024 às 13:38 | Atualizado 25/01/2024 às 13:38'. Below the text are two images: the left one shows a street at night with a bright light source, and the right one shows a person holding a yellow flag or cloth.



One-way communication

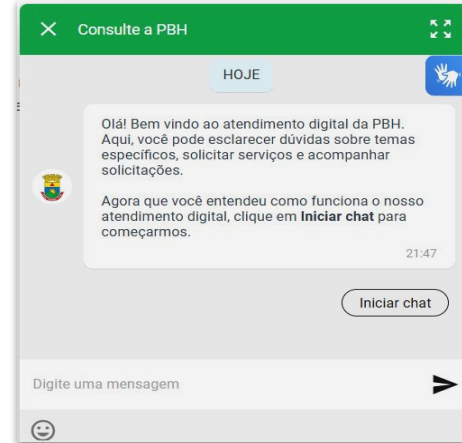


Delivers a message to a large audience without expecting a response

Two-way Communication

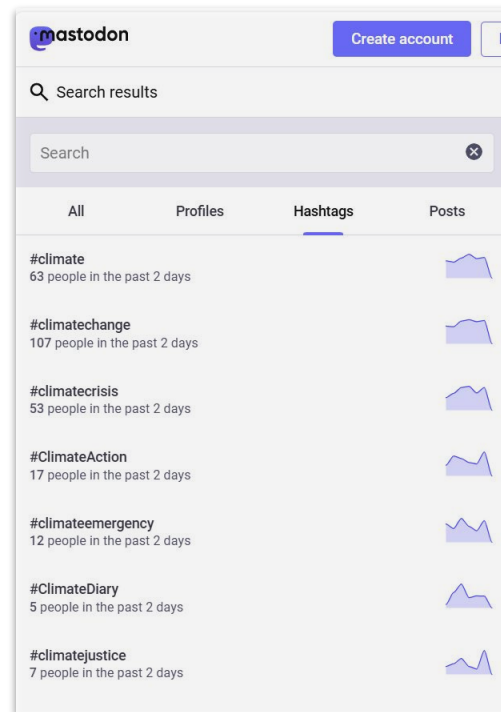


Engages by exchanging information, ideas, and feedback



Top-down information flow

Authorities start the interaction



Citizens start the interaction

Bottom-up information flow

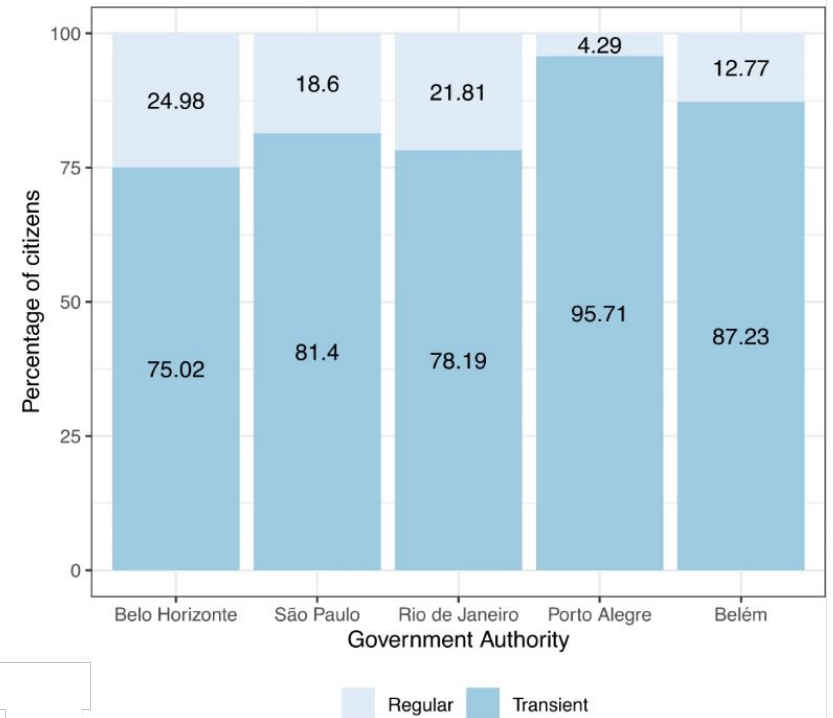
How is the authorities **social media presence**?

- Top-down, one-way and one-size-fits-all approach
- Suitable for reporting situation in the whole city
- Rise concerns about trust between citizens and climate authorities



What drives **citizen engagement** with climate authorities?

1. **Disagreeing** with information about their locations
2. **Complementing** the information with their locations
3. **Updating** with current information
4. **Informing** about donation actions
5. **Expressing** thanks



The Best and the Possible

- The best platform design for a certain type of communication is usually not the platform where the targeted audience are on
- Authorities seek to do what is possible with existing systems that are used by people (e.g. social network)



Platform governance and design impact usefulness

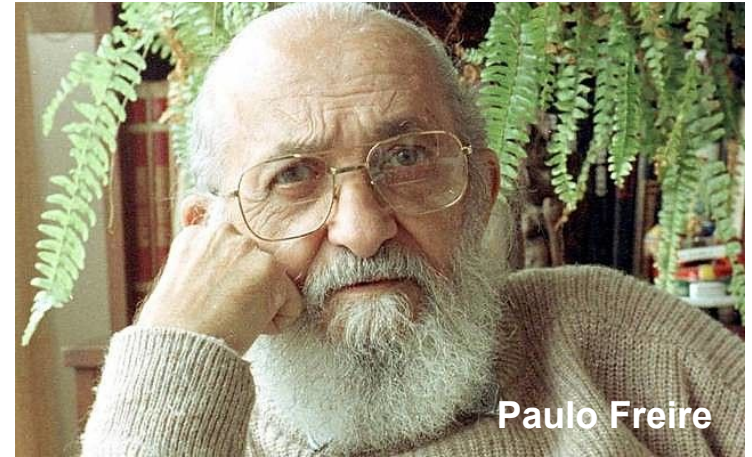
Action, research, and activism

Bottom-up, top-down and **together!**

Science “of the people, by the people, for the people”

- Participatory action research
- Participatory science
- Community and citizen science
- Co-design
- Participatory design

Collective action



Thank you!

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More information

