Left unchecked, group-based disparities (GBDs) threaten to exacerbate profound inequalities and further polarize patterns of risk perception and climate adaptation/mitigation attitudes and behaviors.

Reducing Group-based Disparities (GBDs) in Climate Adaptation

OVERVIEW

In the United States and around the world, race, ethnicity, caste, religion, and nationality frequently predict differential vulnerability and resilience to the adverse effects of climate change. Left unchecked, such **group-based disparities (GBDs)** threaten to exacerbate profound inequalities and further polarize patterns of risk perception and climate adaptation/mitigation attitudes and behaviors. We propose to measure the extent of this problem, to investigate the circumstances around which such disparities arise and can be best addressed, and to work with a range of government and non-government partners to advance technically and politically feasible adaptation strategies.

SOCIOPOLITICAL CHALLENGES

At the heart of our proposal is a recognition that politics and perceptions will continue to strongly affect responses to the climate emergency. While we intend to consider various dimensions of inequality, we propose to **focus on socially and culturally relevant group-based disparities** (i.e., race, ethnicity, nationality, religion) because these are so often the basis of extreme forms of exclusion and for political organization and conflict. Sound technical solutions are likely to be hampered or not even enacted without getting the incentives right for the relevant actors. Ultimately, this will require consideration of how the costs and

benefits of particular policies are framed, and the formulation of notions of "us," or collective self-interest, that simultaneously resonate with *and* help to overcome disparities in hazards and adaptive resources.

We have established a framework for identifying the various proximate and distal causes of GBDs—including the political institutions and social composition of localities—in order to identify potential interventions that could plausibly reduce such disparities.
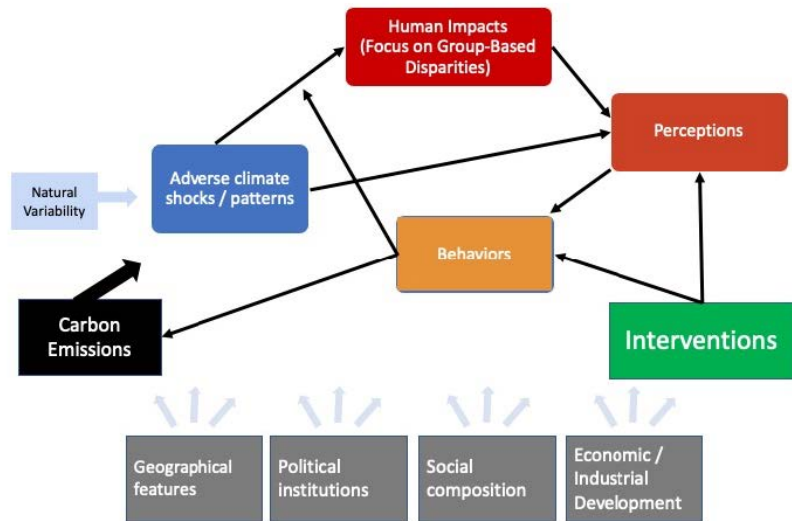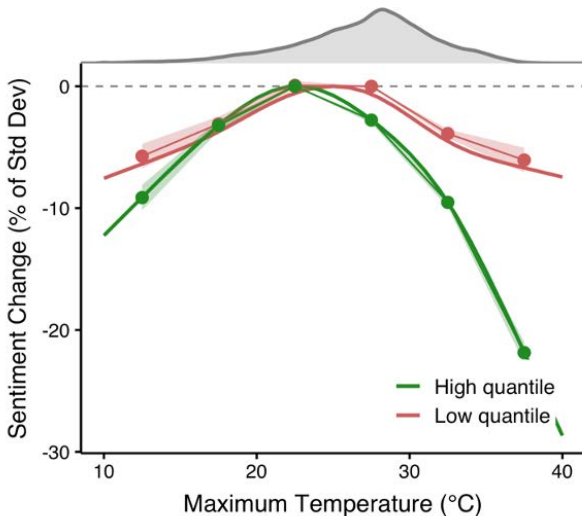

Figure 1: What Drives GBDs

Figure 2: NLP Analysis of Brazilian Twitter Data

MEASUREMENT

We aim to develop a multi-measure "dashboard" that tracks GBDs for a variety of climate adaptation dimensions, addressing a current gap in consistent data about how marginalized groups are impacted by climate change. We will combine high-resolution satellite and other remote sensing data with crowd-sourced data obtained through deployment of a custom mobile app and data generated through Natural Language Processing of social media data.

For example, in Figure 2, we show results from a preliminary analysis of Brazilian Twitter data indicating that at very high air temperatures, misery is more likely in municipalities with higher shares of Afro-Brazilian and Indigenous groups (green) as compared with municipalities with larger shares of White groups (red)—a finding consistent with the notion of GBDs in resiliency.

LOCATION AND PARTNERS

We intend to focus our efforts to explain and to reduce GBDs in nine key coastal cities with unique climate vulnerabilities and ethnically and racially diverse populations: Accra, Ghana; Barcelona, Spain; Boston, United States; Cape Town and Durban, South Africa; Cotonou, Benin; Jakarta, Indonesia; Rio de Janeiro and Salvador, Brazil.

By developing a suite of measurement tools, findings, and analyses, and pairing that with a deep familiarity of the challenges presented by varying social and institutional contexts, our team will be in a unique position to partner with others to identify priority areas and potential solutions for reducing GBDs appropriate to specific localities.

We will work with partners to test and bring to scale efforts to gain cooperation for such policies and practices. Our labs have

substantial experience working with partners in our target cities for a wide range of related problems and are committed to engaging partners and stakeholders in a respectful manner that will take into account asymmetries of power, resources, and knowledge. We will also extend opportunities for student participation, especially through MIT's global experiential learning program, MISTI.

TEAM

Our multidisciplinary team—led by **Evan Lieberman** (Political Science), along with co-PIs, **Danielle Wood** (Media Lab and Aeronautics/Astronautics) and **Siqi Zheng** (Urban Studies and Planning), as well as **Volha Charnysh** (Political Science), **Asya Magazinnik** (Political Science), **Dava Newman** (Media Lab and Aeronautics/Astronautics), and **Fabio Duarte** (Urban Studies and Planning)—works at the nexus of climate and social science and approaches this challenge with a wide range of research methods and regional expertise.

TIMELINE

≈$3.1 million

During years one through three, we will develop our measurement tools and engage partners and stakeholders in our nine target cities, which will require an expanded team of researchers. In years four and five, we will focus on evaluating and estimating the impact of our efforts to reduce GBDs and on generating broader lessons.