Developing an environmental justice index for the Chesapeake watershed report card

22 April 2021



What is Environmental Justice?

- EPA definition: "Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."
- Why does environmental justice matter?



Developing an Environmental Justice Index



Pros- Education, scientific communication awareness, index for comparison

Cons- ground truthing, limited by data accessibility, lack of funding, bias, and misrepresentation



ethnicity pollution water quality homlessness food security historic siting of groups superfund site location green space access distance from pollutants human health project plans for after exposure to pollutants health proximity to pollution community resources pollution air quality health outcomes air quality environmental-quality incarceration satisfaction access to engage w nature autonomy socioeconomics access to waterways representation minority opinion data land use income

Potential
Indicators of
Environmental
Injustice



MEES Program; Environment & Society foundation

Marine Estuarine Environmental Sciences Graduate Program





Traditional course

Increase student knowledge

Primary Goal

Co-produce science product

Issue study group

Instructors impart knowledge to students

Instructor/Student Relationship

Instructors facilitate and learn together with students

Syllabus with multiple topics (instructor-led)

Course Structure

Student led product design, development, dissemination

Exams + assignments

Course Assessment

Contribution to final product



Instructors

Dr. Bill Dennison *UMCES*



Dr. Vanessa Vargas-Nguyen *UMCES*





Guest lecturers

Dr. Sacoby Wilson *UMD Public Health*



Liz van Dolah *UMD Anthropology*

Rona Kobell *MD Seagrant*



Matt Lee *US EPA*



John Wolf Ches Bay Prog



Kristin Saunders
Ches Bay Prog



Briana Yancy Ches Bay Prog



Integration & Application Network support

Steven Guinn

GIS and databases



Dylan Taillie

GIS and indicators



Joe Edgerton

Blogs and indicators



Crystal Nichols *Video editing*





Students

Imani Black UMCES HPL Haoyu Chen UMCES IMET Amber Fandel UMCES CBL Taylor Gedeon *UMD E&S* Shakira Goffe *UMES* Sarah Jones UMCES CBL Katrina Kelly *UMES* Jehnae Linkins *UMD Engr* Nylah McClain *UMES* Andrea Miralles-Barboza UMD E&S Megan Munkacsy UMCES CBL Chelsea Richardson UMES Amanda Rockler UMD E&S Ashley Silver *UMES* Isabel Sullivan UMD Biology Faith Taylor UMD E&S Imani Wilburn UMES Olivia Wolford UMD Anthropology





Reviewed key papers



Environmental Justice

Paul Mohai, 1 David Pellow. and J. Timmons Roberts³

School of Nasural Resources and Environment, University of Michigan, Ann Arbor,

² Department of Sociology, University of Minnesoea, Minneapolis, Minnesoea 55455; email: dpellow@umn.edu

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1543-5938/09/1121-0405\$20.00

disproportionate impact, exposure, inequality, mobilization, pollution,

The article reviews two decades of scholars' claims that exposures to pollution and other environmental risks are unequally distributed by race and class, examines case studies of environmental justice social movements and the history and politics of environmental justice policy making in the United States, and describes the emerging issue of global climate justice. The authors engage the contentious literature on how to quantitatively measure and document environmental injustice, especially the complex problems of having data of very different types and areas (such as zip codes, census tracts, or concentric circles) around polluting facilities or exposed populations. Also considered is the value of perspectives from critical race theory and ethnic studies for making sense of these social phenomena. The article concludes with a discussion of the globalization of the environmental justice movemen discourse, and issues, as well as with some policy implications of finding and understanding environmental justice. One unique feature of this review is its breadth and diversity, given the different approaches taken





Just Transformations to Sustainability

Nathan J. Bennett 1,2,3,* (5), Jessica Blythe 4 (9), Andrés M. Cisneros-Montemayor 1,5 (9),

- Gerald G. Singh 1,500 and U. Rashid Sumaila 1,6 Institute for the Oceans and Pisheries & Institute for Resources. Environment and Sustainability.
- University of British Columbia, Vancouver, BC V6T1Z4, Canada Center for Ocean Solutions, Stanford University, Stanford, CA 94305, USA
- ECOMERS, Université Côte d'Azur, CNRS, 06108 Nice, France
- Environmental Sustainability Research Centre, Brock University, St. Catharines, ON L2S3A1, Canada Nippon Foundation Nereus Program, University of British Columbia, Vancouver, BC V6T1Z4, Canada
- School of Public Policy and Global Affairs, University of British Columbia, Vancouver, BC V6T1Z2, Canada

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Abstract: Transformations towards sustainability are needed to address many of the earth's profound environmental and social challenges. Yet, actions taken to deliberately shift social-ecological systems towards more sustainable trajectories can have substantial social impacts and exclude people from decision-making processes. The concept of just transformations makes explicit a need to consider social justice in the process of shifting towards sustainability. In this paper, we draw on the transformations, just transitions, and social justice literature to advance a pragmatic framing of just transformations that includes recognitional, procedural and distributional consideration Decision-making processes to guide just transformations need to consider these three factors before, during and after the transformation period. We offer practical and methodological guidance to help navigate just transformations in environmental management and sustainability policies and practice.

The framing of just transformations put forward here might be used to inform decision making in numerous marine and terrestrial ecosystems, in rural and urban environments, and at various scales from local to global. We argue that sustainability transformations cannot be considered a success

Keywords: Just transformations; social justice; environmental sustainability; transformations; sustainable development; environmental governance; social-ecological systems

Many of the world's ecosystems are unsustainable at current levels of human use [1-5]. If left unchecked, environmental declines and degradation can undermine both environmental productivity and human health and well-being. Thus, ensuring the well-being of current and future generations within the limits of a finite planet is one of the defining challenges of our time. In response to this challenge, the notion of transformations towards sustainability has risen to the forefront of global scientific and policy endeavors. For example, international sustainability initiatives, including Future Earth [6], the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) [4,7] and the United Nations' 2030 Agenda for Sustainable Development [8], explicitly seek to understand and support deliberate societal transformations. On the ground, there is also a recognized need to radically transform the way we manage numerous marine, freshwater and terrestrial systems in rural and urban environments to promote environmental sustainability. Deliberate actions taken to achieve environmental sustainability might take many forms, from strict preservation where human

Sustainahiliru 2019. 11. 3881 : doi:10.3390/su11143881

An Ecologic Framework to Study and Address Environmental Justice and Community Health Issues

Sacoby M. Wilson

ABSTRACT

This article builds on environmental justice (EI) research that examines the differential exposure of disadvantaged populations to environmental hazards and health resources. This article presents a multidisciplinary ecologic framework that postulates macro and meso-level determinants of health are opera tionalized through segregation and community zoning, planning, and development to create living conditions in urban landscapes. This article promotes the need for a more holistic approach to community health by defining communities as "human ecological systems" with health occurring across a continuum and at multiple scales. By modifying ecologic features of the environment, we can increase the capacity of disadvantaged communities to overcome their exposure to environmental hazards and enhance their access to health resources to achieve environmental justice and improve community health.

INTRODUCTION

TRADITIONAL PUBLIC HEALTH research has explored the ontribution of social determinants (i.e., structural cohol consumption, smoking), and health care access to health disparities in the United States. New research has emerged to examine the contribution of structural and environmental factors to community health and racial/eth-nic and socioeconomic health disparities at multiple levvironmental factors to community health and racial/ethnic and sociococomic health dispurities at multiple-levels. Focusing on how environmental factors and social conditions and processes interact to drive health our conditions and processes interactions. See that the conditions are conditions and processes are also drive processes and become processes (i.e., segregation, suburbanization, urban sprawl, urban revitalization) to demonstrate the importance of places and conditions are conditionally associated to the conditions of the drive processes and become processes. The conditions of the drive processes are conditionally included the conditions of the drive processes are conditionally included the conditions of the drive processes are conditionally as a condition of the conditions are conditionally associated as a condition of the condition duce environmental health disparities.

NEW ENVIRONMENTAL JUSTICE TERMINOLOGY

A wealth of literature describes El issues that disproportionately burden disadvantaged populations racism, poverty), health behaviors (i.e., diet, exercise, alcent report, Toxic Wastes and Race at Twenty,2 provides ¹Devon Payne-Sturges and Gilbert C. Gee, "National envi-

environmental context in the examination of environ-mental justice (EJ) and community health issues. Build-core and the context in the examination of environ-mental justice (EJ) and community health issues. Build-core and the context of the Core 2000; 181–196; M. Soobader M., C. Lubbin and G.C. Geo. itow, "Environmental justice: numan neatth and environmental inequalities," Annual Review of Public Health 27 (April 2006): 103-124.

ert D. Bullard, et al., Toxic Wastes and Race at Twenty. Dr. Wilson is at the Institute for Families in Society, University of South Carolina in Columbia, South Carolina.

1887–2007: Grassroots Struggles to Dismantle Dratromental Raction to the United States. (Cleveland, OH: United Church of Christ, 2007). https://doi.org/10.1007/s13157-020-01388-0

MARSH RESILIENCE SUMMIT



Owest to spondant

Marsh Migration, Climate Change, and Coastal Resilience: Human Dimensions Considerations for a Fair Path Forward

Elizabeth R. Van Dolah 10 · Christine D. Miller Hesed 1 · Michael J. Paolisso

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Coastal regions worldwide will be dramatically reshaped by the impacts of sea-level rise. Of particular concern are impacts on coastal wetlands, the loss of which would have consequences for both human and ecological communities. The future of many coastal wetlands will depend greatly on their capacities to migrate into uplands. Coastal resilience work within wetland sciences as increasingly focused on developing strategies to promote marsh migration into rural uplands; however, less attention has been given to the impacts that migrating marshes have on people in these landscapes. In this paper, we share rural perspectives and experiences with marsh migration through three case-studies from collaborative research with rural, low-lying communities on the Chesapeake Bay, USA. These case-studies demonstrate the complexities of the challenges facing rural communities as a result of marsh migration, and reveal important issues of equity and injustice that need attention in future coastal resilience work. We draw upon a socio-ecological systems (SES) approach to highlight potential human-ecological misal ignments that emerge with marsh migration and to offer future research questions to inform socially-just and resilient wetland migration planning in

Keywords Marsh migration · Coastal wetlands · Human dimensions · Rural landscapes · Socio-ecological systems · Coastal

y due to climate-driven sea-level rise (IPCC 2014). Already, low-lying coastal regions face more frequent and severe flooding events from storm and tidal surges. In the United States (US), 2015 and 2018 set historic records for the highest number of annual high-tide flood days along US coastlines since 1920 (Sweet et al. 2019). High-tide flood days are most prevalent on the Atlantic and Gulf Coasts (Sweet et al. 2019), with the Mid-Atlantic region experiencing some of the highest against storms and floods (Arkema et al. 2013), regulators of national tidal flood frequencies due to the compounding factors of land subsidence and ocean current shifts (Sallenger et al. 2012, Kopp 2013, Ezer and Adkinson 2014, Sweet et al. 2019). The Mid-Atlantic region includes the et al. (2014) estimate that a 1-m rise in sea levels will result in

Coastlines worldwide are facing dramatic changes this centu-

Fizabeth R Van Dolah

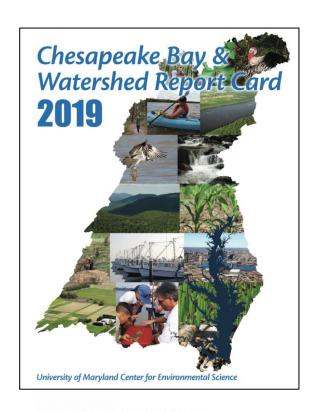
Department of Anthropology, University of Maryland, 1111 Woods Hall, 4302 Chapel Lane, College Park, MD 20742, USA

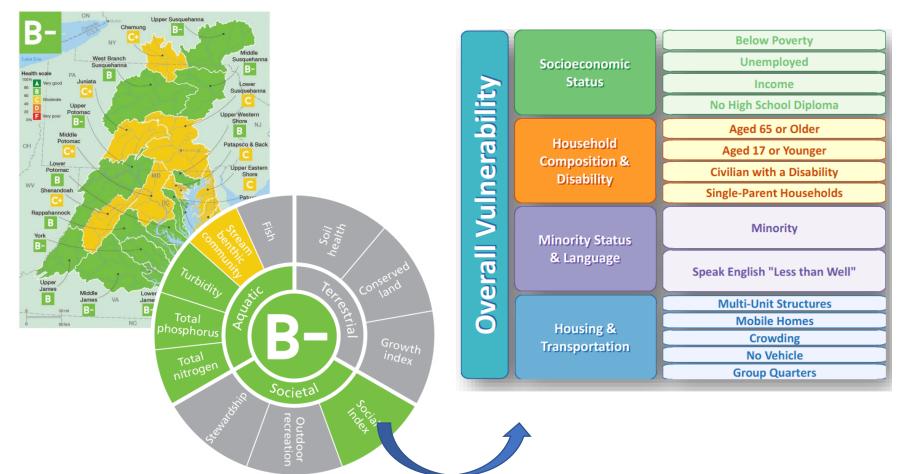
Chesapeake Bay where, within the last century, water levels have risen by 30 cm (Titus and Strange 2008) and are projected to rise an additional 40-130cm above 2000 levels by 2100 (Boesch et al. 2018). These trends will have conse quences for human communities and ecosystems alike as inundation rates increasingly affect the social and ecological conditions of coastal regions.

In particular, there are growing concerns regarding sealevel rise impacts on tidal wetlands, which provide critical ecosystem services in coastal areas, including as buffers greenhouse gases (Mitsch et al. 2013), habitat for wildlife and fisheries (Rewa 2007) and as natural filtration systems supporting water quality health (Gillium 1994). Blankespoor the loss of 68% of existing coastal wetlands worldwide — a \$703-million (US) global economic loss per year due to re-duced wetland goods and services, such as flood and storm protection, recreational amenities, commercial fisheries, and water quality services. Others stress how these losses will exacerbate problems for already-vulnerable populations by reducing natural flood protections, resulting in a 30-60%



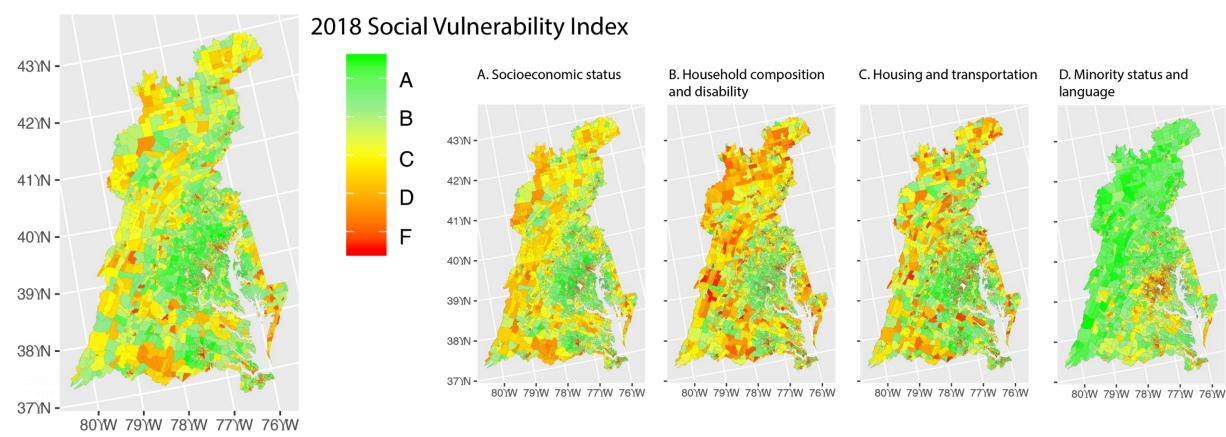
Expanding the Chesapeake watershed report card







Social vulnerability Index provides potential indicators for a socioenvironmental report card



SVI (Flanagan et al. 2011) from https://svi.cdc.gov; Analysis using R Studingas-Nguyen, 2020



Several tools available, e.g., EJSCREEN



Environmental Topics

Laws & Regulations

About EPA

EJSCREEN: Environmental Justice Screening and Mapping Tool

Launch the EJSCREEN Tool

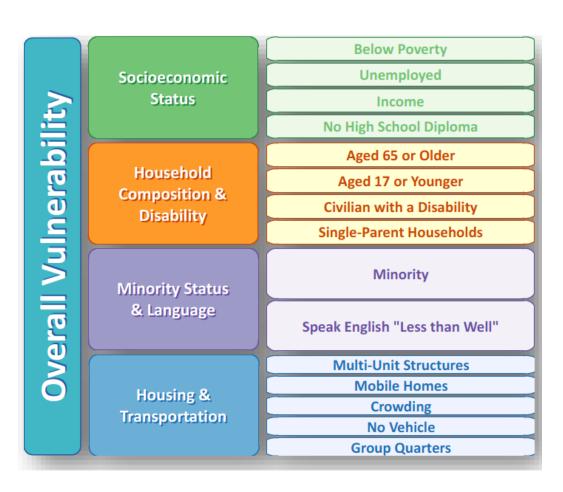
Explore EPA's environmental justice screening and mapping tool





Environmental justice indicators

- Proximity to hazards
- Access to nature vs.
- Restoration funding
- Management & governance







Proximity to Wastewater Treatment Plants

Nylah McClain:

University of Maryland Eastern Shore

Student Blogs

Black Lives (And Environmental Journalism) Matter

Andrea Miralles-Barboza · 24 February 2021 | MEES 718 Spring 2021 | comments

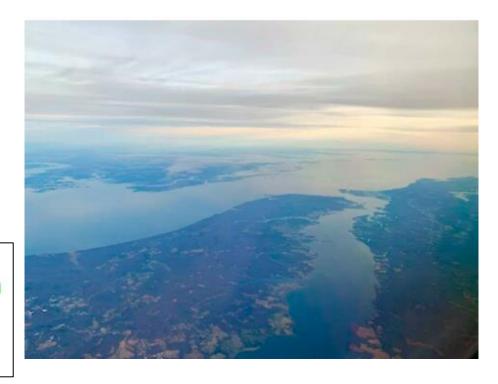
Into the Void of Environmental Justice Data

Katrina Kelly · 9 April 2021 • 4 comments

We Blacks Don't Trust Us Scientists: Helping to Bridge a Gap Between Two Communities I am a Part of

Shakira Goffe · 9 April 2021 • 6 comments

Where Data Falters, Communication Flies



Why Now? A Critique of the Chesapeake Bay Program's Diversity, Equity, Justice and Inclusion Action Plan

Faith Taylor · 10 March 2021 | MEES 718 Spring 2021 | ♠ 7 comments



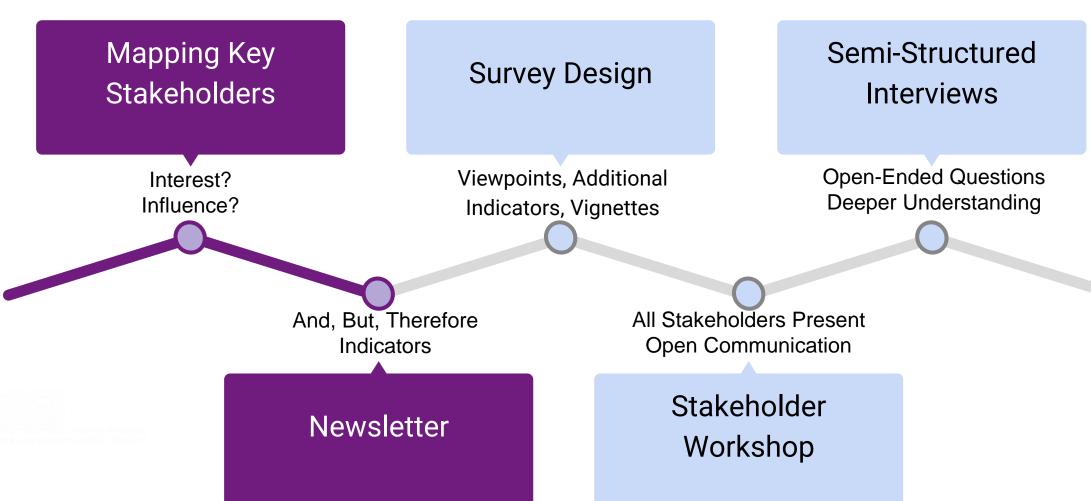
Meaningful Stakeholder Engagement

INCREASING STAKEHOLDER INFLUENCE ON THE RESEARCH

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
STAKEHOLDER PARTICIPATION GOAL	Researchers provide stakeholders with balanced and objective information to assist them in understanding the research.	Researchers obtain stakeholder feedback on the research.	Researchers work directly with stakeholders to ensure that stakeholder concerns and aspirations are consistently understood and considered in the research.	Researchers partner with stakeholders for salient aspects of the research.	Researchers assist stakeholders in conducting their own research.
PROMISE MADE TO STAKEHOLDERS BY RESEARCHERS	We will keep you informed.	We will keep you informed, listen to and acknowledge your concerns and aspirations and provide feedback on how your input influenced the research.	We will work with you to ensure your concerns and aspirations are directly reflected in the research and we will provide feedback on how your input influenced the research.	We will look to you for advice and innovation in designing and conducting the research and incorporate your advice and recommendations to the maximum extent possible.	We will provide advice and assistance as requested in line with your decisions for designing and conducting your research, as well as for implementing the findings.



Engagement Process & Progress





Next Steps: Multi-Phased Approach for Co-Producing an EJ Index



Phase 2: MEANINGFUL STAKEHOLDER ENGAGEMENT

Phase 3: PROGRESSIVE INTEGRATED ACTION



Phase 1: REPRESENTATIVE INDICATOR DEVELOPMENT

Phase 1 Steps

- Initial conversations with multiple stakeholders.
- **Survey** finalization & dissemination.
- **EJ newsletter** finalization & dissemination (multilingual).
- **Communicate** Phase 1 findings to international partners in COAST-Card project.



Phase 1: REPRESENTATIVE INDICATOR DEVELOPMENT

Phase 2: MEANINGFUL STAKEHOLDER ENGAGEMENT

Phase 2 Steps

- Continued MEES courses for developing EJ index.
- **Data Collection**: Semi-structured interviews; meet ups and deep listening sessions.
- Co-production of EJ index with stakeholders.
- **Collaborative Evaluation**: by monitoring, adapting and finalizing EJ index.



Phase 1: REPRESENTATIVE INDICATOR DEVELOPMENT

Phase 2: MEANINGFUL STAKEHOLDER ENGAGEMENT

Phase 3: PROGRESSIVE INTEGRATED ACTION

Phase 3 Steps

- Collaborative Action plan development with stakeholder input
 - Reaching out to federal/state agencies, discussions on reparations and how to continue supporting EJ communities, communication.
- **Data Calls**: Make calls for essential missing data to better inform and measure EJ issues
 - Calls to universities, government, NGOs to support and conduct data collection.
 - Community science



Q&A



Why is environmental justice important?

Because our science does nothing to protect or conserve if that protection and conservation is only done for some at the expense of others.

for health of planet

Everyone not impacted equally

Environmental progress without justice is not true progress

Injustice creates imbalances that proliferate throughout structures and systems.

Environmental quality is only as good as the most vulnerable communities experience

EJ is important to ensure that the smallest voice of a community is not taken advantage of or harmed by the stride of environmentalism.

Equal rights to all classes and diversities

Environmental justice is important for equity amongst communities, furthering environmental science research/policy, keeping companies accountable for their actions, including stakeholders and communities in decision-making

Because Black Lives Matter and other people of color should not have to be disproportionately exposed to risk

EJ is important because environmental issues must be considered from and with the perspectives of who they impact most

Environmental justice is important because everyone that is effected by the environment, its changes and implications towards it, it's important for everyone to have the resources and education

Environmental justice is important to keep everyone informed of environmental disparities faced.

Everyone deserves fair treatment across the board

Historical inequality, detrimental health, economic, etc impacts

If the environment impacts all, then all should be able to speak on how it impacts them. Therefore it is important to express all opinions, to better the environment as a whole & not be biased.

Environmental health and human Heath are inextricably linked



What are the benefits of having an environmental justice index?







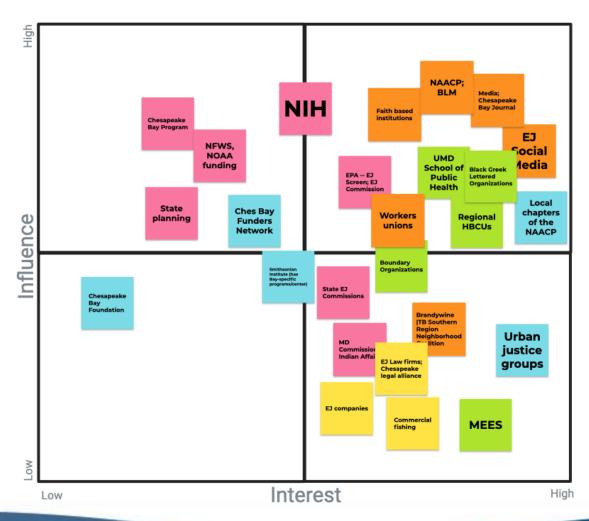
What are the challenges in developing an environmental justice index?

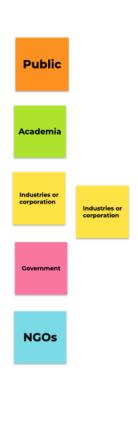
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data
                                           thoroughness
                  changing contexts
                                                communication
             realistic impacts
                                      systemic-barriers
                           developing consensus
ground truthing
                                                        prejudiced
            formative research gaps
                                             misrepresentation
measuring success
                         avoiding inherent biases
                                                         lack of funding
                    developmental opportunity
  lack of data
                                                        collecting data
             might homogenize groups
                                             lack of foundation
 mapping
                  community participation
                                                 multi dimensional
   data availability
                                 ensuring cooperation
                                                               ignorance
                       needs to be nuanced
                                                           injustice
        awareness
            interpreting data
                                        polictics-policy
                            all-encompassing
                      resources
```





Stakeholder Engagement: Mapping Key Stakeholders







Stakeholder Engagement: Newsletter

Environmental issues; images

Blog materials

Multi-lingual

Vargas-Nguyen dissertation base

Conceptual diagram

Map(s) with hazards (rural and urban) And/But/Therefore statement (summary)

Presentation slide desk: Intro WHY, Who we are, Our approach, Topical slides

Discuss scale of what we are doing and how it fits into larger picture

Long-term engagement approach

Social media links

List our collaborators



Stakeholder Engagement: Survey Design

Do you have home insurance/flooding insurance?

Are you comfortable answering questions about this issue?

Personal charactistics: age, gender ID, racial ID, education level, location, occupation, income range

How long have you lived in your present location?

Do you have access to environ education facilities or materials?

Have you had any health problems over the past 2 years?

Do have health insurance? Do you feel that it appropriately covers your needs? closed ended/open ended questions

ranking questions (scale 1-5)

table of indicators for ej, rate how important/how well it captures ej? scale of 1-5, N/A as option

ranking indicators in order

engagement questions: do you get involved in decision making process? (involvement/engage ment/voice heard in these process) Survey

Group 2- The least meaningful form of engagement, but the most ideal for engaging with large amounts of people. The least ethically risky

Group 2-Processing the data from these surveys will be time consuming.

Group 2-Consent message needed at start of survey

Group 2- How can we make this accessible to people disabilities?

Are you aware of any EJ initiatives?

Have you experienced any environmental injustices?

Have you participated in a survey on environmental justice or climate justice before?

What do you think about when you hear the term EJ?

Provide EJ definition

What environmental hazards are you aware of in your location?

Rank these potential EJ indicators as to their importance

In the past 2 years, have you participated in a clean up, demonstration or group enviro activity?



Stakeholder Workshop

Group 2- Hosting a workshop might not be feasible in the upcoming month.

Group 2- How many people would be in the workshop? Who would be participating? What are the outputs we want from the workshop? Will it be one large group?

Group 2- Having a reflective exercise that has people sort out there ideas beforehand, so their concepts do not get lost in the shuffle

Group 2- Reflections with conversations during the workshop and then look at how the responses have changed at the end

Group 2- Do we really make workshop or are we using a focus groups?

Group 2- Will need more than one workshop? Who will facilitate these? Should the workshops cater to differ stakeholders?

Group 2- Will there be a time for stakeholders to provide feedback about the process?

Group 2- Consider partnering with community orgs for the workshops

Group 3: Bring list of potential indicators, asking stakeholders for input, rankingask whats missing, whats most important?

Group 3:

Group 3:

How can we persuade people come to our workshop?

> Collective workshop after individual workshops

Example: community members sharing knowledge with and industry

Group 1: Including

stakeholders at t

same workshop.

different

Need members to be comfortable, an previously engaged in order to have meaningful conversations. And bring donuts.

name? University? Workshop? or just

Specific and general workshops. On the coast versus inlan etc.



Group 3: post-workshop Multi-stakeholder surveys to inform next workshop/for workshops report write up

> Mentimeters/more anonymous engaging techniques within workshops

> > How to introduce us? Using what ourself?

Stakeholder Engagement: Semi-structured Interviews

