

HBCU EJ Technical Collaborative: Developing Geospatial Tools to Support Community-Based Action Towards Clean and Safe Environments

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Abstract:

Under the Biden Administration, the United States of America rolled out the Justice 40 (J40) initiative aimed at directing 40% of federal climate and clean energy investments to disadvantaged communities, yet its implementation faced significant challenges, including defining and measuring "benefits", equitable resource distribution, interagency coordination, and community engagement. Successful implementation required overcoming obstacles such as the lack of standardized metrics for measuring benefits, the challenge of equitable resource distribution, and the necessity of effective community engagement. The executive order 14008 directed the White House Council on Environmental Quality (CEQ) to develop the geospatially enabled Climate and Economic Justice Screening Tool (CEJST) to highlight disadvantaged communities (White House 2021, Shrestha, Neuberger et al. 2022, Shrestha, Rajpurohit et al. 2023, Lewis 2024). However, the CEJST did not include race as a layer or indicator of a disadvantaged community (DAC). Race has been found to be the most significant predictor of where people are most likely to be harmed by environmental injustice (Mascarenhas, Grattet et al. 2021, Lewis 2024) and many policies have disproportionately affected people of color and the poor (Bullard 2005). Other geospatial screening tools such as the Environmental Justice Mapping and Screening Tool (EJScreen), launched in 2015, included the CEJST and disadvantaged communities' data as visible layers to visualize environmental burdens. While EJScreen is a screening and mapping tool that consists of nationally consistent data to highlight environmental burdens, its maps are percentile based (Ebi 2019, U.S. Environmental Protection Agency (EPA) 2024). Percentile-based thresholds may be insufficient to characterize specific impacts to individuals and vulnerable communities (Osakwe, Motsinger-Reif et al. 2024).

The HBCU Environmental Justice Technical Collaborative (HEJTC), in partnership with the Bullard Center for Environmental Justice created a Justice40 Tracking Tool and the HBCU Climate and Environmental Justice Screening Tool (HCEJST), leveraging Geographic Information Systems (GIS) to map grant recipients, analyse environmental burdens, and identify vulnerable populations at local scales. In particular, the HCEJST was developed to include customizable layers and include race. These tools enhance community advocacy by providing critical spatial data that informs residents about environmental hazards, resource allocation, and potential health impacts. Additionally, the HEJTC developed training to engage citizens and communities interested in using the tools for their own advocacy purposes. Building on previous projects to incorporate geographic information systems (GIS) into community engagement and empowerment (Jordan, Stallins et al. 2011, Hartley, Lobatos et al. 2021), HEJTC has further enabled and promoted participatory mapping and training in the of GIS in the environmental justice space.

Our project goals were to develop publicly accessible tools to track and map federal Environmental Justice40 funds spending and to develop a customizable screening environmental justice screening tool that included race as visible layers. The tools would be built to empower communities to set their own priorities, identify and remove bias and systemic racism in infrastructure programs; and indicate where federal investments in the Justice40 Initiative could be used to reduce pollution and provide enhancements, benefits and investments in disadvantaged communities to make them environmentally sustainable, healthy, and resilient. This study set out to track J40 funding to indicate and map the flow of award related dollars to disadvantaged communities. The following questions guided this effort:

1. What are the demographics of the communities that are being awarded J40 related dollars?
2. How many awards and how much total award dollars have been awarded to DACs vs non-DACs?

This presentation highlights the development of two geospatial tools designed to facilitate these goals, focusing on their application in Louisiana and Texas. We describe the development and beta testing of innovative geospatial tools designed

to empower community-based action towards achieving clean and safe environments. The HEJTC addressed challenges like measuring non-financial benefits, inconsistent data collection and transparency among federal agencies, and involving disadvantaged communities in identifying needs for effective resource allocation, especially in the most underserved communities. Specifically, we set out to build: a web scraping tool that pulls data (of certain criteria) from federal spending websites (i.e. USASpending.gov) into a single database for U.S. States, but focused on Louisiana and Texas, a front-end user interface for users to interact with the data, and a customizable tool based on the CEJST that included race layers.

In their current forms (EJScreen, CEJST, etc), existing data was often inaccessible to these communities. Our project collected data from various platforms, converted the existing code from Mapbox (CEJST), and integrated it into ArcGIS tools, enabling customization and real-time visualizations that are useful for community-based organizations. The ESRI tools allowed for immediate adjustments based on participant feedback, ensuring that the final products effectively supported community education, outreach, and advocacy efforts. The original 21 Justice 40 pilot programs represent a strategic effort by various government agencies to tackle environmental justice and equity concerns across a spectrum of environmental, economic, and public health challenges. These programs were selected for the pilot based on their potential to address the disproportionate impacts of environmental degradation and pollution on marginalized communities, particularly those with low- income and minority populations.

HEJTC conducted beta testing of the developed tools with several stakeholder groups. After thorough training, participants gave essential feedback on data visualizations and their specific needs. This collaboration ensured tools and maps were vetted by affected communities before release. Participants highlighted how the tools could empower communities to take a more active role in decision-making processes by equipping them with spatial evidence. Despite successes, challenges remain in ensuring sustained community engagement and maintaining data accessibility. The integration of real-time data visualizations allows community organizations to adapt their strategies based on immediate feedback. The tools were designed to be accessible and culturally competent, ensuring that they met the unique needs of underserved communities. The development of geospatial tools like the Justice40 Tracking Tool and HCEJST illustrates the potential for technology to enhance community-based action towards environmental justice. This workshop will share insights for inclusive, culturally competent geospatial tool development, training, and testing aimed at supporting underserved communities. Attendees will gain insights into the practical applications of these tools and their potential to enhance community resilience and sustainability.

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