SAMUEL CENTRE
FOR SOCIAL
CONNECTEDNESS

Samuel Centre for Social Connectedness

2024 Fellowship Program

Project Proposal

PARTNER ORGANIZATION:

Data-Driven EnviroLab,

University of North Carolina at Chapel Hill

PROJECT TITLE:

Measuring Urban Environmental Performance
and Social Inclusion

Partner Organization: Data-Driven EnviroLab

The Data-Driven EnviroLab (DDL) is an interdisciplinary and international group of researchers, scientists, programmers, and visual designers. The DDL uses innovative data analytics to distill signals from large-scale and unconventional datasets and develop policy solutions to contemporary environmental problems. Working with scholars and policymakers across the globe, DDL strives to strengthen environmental policy at all levels. We promote evidence-based approaches to problem-solving while boosting information disclosure and transparency among public institutions, private companies, civic organizations, and individual citizens.

The DDL is based at the University of North Carolina Chapel Hill and is a joint initiative between the Department of Public Policy, the Environment, Ecology, and Energy (E3P) Program, and the Institute for the Environment at UNC. As an academic research lab headed by Angel Hsu, Associate Professor at UNC-Chapel Hill, we have a particular mission to help train data-minded scholars and leaders in the field of environmental policy. Our group is primarily comprised of student researchers at the undergraduate and graduate levels.

The DDL is currently working on projects related to tracking the climate commitments -- particularly net-zero targets -- of non-state and subnational actors, using new digital technologies such as remote sensing, artificial intelligence and machine learning to track climate emissions, studying urban heat and its differential impacts on low-income and minority communities, and growing the Urban Environment and Social Inclusion index, or UESI, which tracks the progress of 300 cities around the world on certain environmental and social indicators.

Learn more at: datadrivenlab.org

PROJECT INFORMATION

Location of the Project: USA, Remote

Fellows located near our UNC Chapel Hill office will have the opportunity to work alongside our team in person, and will have access to an office space, a monitor, desktop computer, and other supplies as needed. We are looking for someone who can work locally with us in our Chapel Hill Office.

However, we are willing to review applicants in an US-based time zone (GMT 5 – GMT 8). If the fellow were to work with us in Chapel Hill, we could provide access to an office space, a monitor, desktop computer, and other supplies as needed.

Section 1: Description of the Project

Are you interested in exploring urban sustainability at the intersection of social inclusion and sustainability action?

The Urban Environment and Social Inclusion Index (UESI) is a research effort that aims to provide the data that urban residents, city managers, and policymakers need to understand their city's

performance on critical issues at the intersection of social inclusion and the environment. Incorporating novel geospatial approaches, including remotely-sensed data and open-source datasets (such as OpenStreetMap), the Index spatially maps environmental performance in nearly 300 cities, and reveals how these cities perform on sustainable, inclusive urban growth.

The framework focuses on quantifying progress on the environmental dimensions of the United Nations Sustainable Development Goal 11, which aims to make cities inclusive, safe, resilient, and sustainable. It captures the spatial and socio-economic distribution of air pollution, urban heat island effects, urban tree cover, and public transportation access, amongst other environmental measures. This research aims to demonstrate the potential for innovative datasets to provide near real-time assessment of environmental performance in a replicable and scalable manner. Furthermore, the UESI highlights knowledge gaps and identifies research priorities that could help cities build an evidence-based approach to enhance the equity of urban environmental

Section 2: Goals of the Project

In 2024, we plan to deepen various aspects of the UESI, where an SCSC fellow can contribute or add contextualization through in-depth case studies. Some of the key priorities during the summer 2024 for the UESI include finalizing a major update to the Index, which we intend to launch in June 2024. We are also actively working on developing new indicators such as Climate Policy and Canopy Urban Heat Island and deepening our understanding of the health impacts of disproportionate heat exposure in US cities.

In the past, we've had SCSC fellows contribute directly to the UESI by assisting with data collection, analysis, and computer programming. We've also had SCSC fellows deepen examination of a particular aspect of urban environment and social inclusion through case studies and multimedia content. Previous projects from DDL Fellows have included explorations of mapping play spaces in New York City, Urban Heat Island effect in Montreal, inclusive air monitoring strategies for urban areas, and the role of public transit systems in inclusive cities.

This year, DDL is seeking a SCSC Fellow to work on **one** of three projects:

1) **Evaluating Subnational Climate Policies for a new climate action report card:** Since climate science and the 2015 Paris Agreement has established the global goal of keeping temperature rise below 1.5 degrees C, nearly 800 cities and regional governments have set their own targets to reduce emissions to net zero. At the same time, there have been questions regarding the credibility and integrity of efforts, with accusations of greenwashing and "window dressing." DDL has developed a framework, the Cities Climate Action Report Card, to evaluate cities' climate action plans to determine best practice and where efforts might be falling short. This work commenced in January 2024 and the Fellow would have the opportunity to take a deep dive into selected cities and assist with scoring and evaluation, including (i) Net zero definitions, strategies, (ii) Use of nature-based solutions, (iii) Use of insetting/offsetting strategies, (iv) Treatment of out of boundary emissions - embodied carbon in building materials, procurement, etc.

2) **Deepening the UESI's on relevant case studies for heat stress or air pollution :** Climate change and air quality are two of the key components of the UESI. We currently rely on remote sensing data to develop our high-resolution surface urban heat island (SUHI), fine particulate pollution, and nitrogen dioxide indicators. While we are currently updating the indicators with the latest data available and incorporating new indicators such as Canopy Urban Heat Island, this year, we are seeking to deepen our analysis on these indicators, including piloting and validating the incorporation of ozone or integrate crowdsourced air quality data to develop a high resolution air quality indicator in cities of interest. In addition, we will analyze the effect of UHI on heat stress to better understand citizens' exposure to outdoor heat, including the integration of crowdsourced data, and its relation to other environmental outcomes like urban canopy.

3) **Expanding socioeconomic data for equity analysis:** The UESI leverages socioeconomic data to provide meaningful insights about the distribution of environmental outcomes in relation to income, and identify whether less affluent citizens are exposed to higher environmental hazards or have access to less environmental benefits. Currently the UESI relies on socioeconomic data to perform this analysis, namely population and income from official sources, and when not available we use raster datasets of equivalent metrics to fill the data gaps. However, official reports on income data have become less frequent at the neighborhood level and we are looking to explore suitable alternatives that allow us to further explore environmental inequality. The Fellow would have the opportunity to work exploring potential alternative socioeconomic indicators, aligned with the UESI equity framework, and pilot their use to evaluate environmental inequality in global cities.

Section 3: Guiding Questions

PROJECT ONE:

1. What are the contexts and challenges for cities' decarbonization efforts?
2. Are cities' net-zero plans credible?
3. Are cities incorporating consideration of the disproportionate impacts of climate change on vulnerable communities when developing their climate plans and commitments?
4. What is the relationship between climate-conscious cities and social connectedness?

PROJECT TWO:

1. How do heat and air pollution impact people's experiences of cities? How can it impact social isolation and its inverse, social connectedness?
2. How does urban heat and air pollution create systemic divides and social marginalization?
3. What responses can governments (from local to federal) take in order to limit the impacts of urban heat and air pollution to create equitable cities?
4. Citizen science campaigns can empower the community to be a part of climate solutions and foster a sense of social inclusion and ownership of the problems facing their city. How can cities involve their citizens in remote sensing efforts to measure thermal comfort and air pollution?
5. What is the relationship between climate-conscious cities and social connectedness?

PROJECT THREE:

6. What are the latest developments in welfare analysis and what are the most relevant metrics applied at the urban level?
7. What are some of the most relevant sources of welfare indicators available at a global or regional level and what are their methodological advantages and limitations compared to income or productivity metrics?
8. How can these indicators be useful for the UESI to evaluate environmental equity under a distributional equity approach?
9. How can articulating environmental equity and/or inequity help build more connected communities and foster belonging?
10. What methods and tools can we use to integrate these metrics in the UESI framework to evaluate environmental inequality throughout selected cities?

Section 4: Key Deliverables

- **1 blog post** (500 – 1,000 words), posted to SCSC's website.
- **1 blog post** (500 – 1,000 words), posted to DDL website with a focus on methodology, findings and innovative visualizations.
- **A Community Engagement Initiative (CEI)** in support of the Final Output
- **Final Outputs**
  - 1) This project will involve contributing to the Urban Environment and Social Inclusion Index (UESI) in alignment with **1 of the 3** projects above.
  - 2) Building off the research used to contribute to the UESI, the fellow will write a 20-30 page report detailing the data sources, methodologies, scripts and analyzing the findings including their interaction with SCSC's Belonging framework, as well as steps for future replication and scaling.
    - Please note that the detailed methodology and findings in the report can serve the content of the DDL blog post, either in full or partially.
- **A Final Presentation** with the cohort

APPLICANT INFORMATION

Key Attributes and Skills in the Applicant

Preferred qualifications:

- Background in urban studies, environmental studies, remote sensing, GIS, statistics, computer science or a related field
- Strong quantitative research skills
- Strong writing skills
- Able to work independently and with remote team members
- Excellent time management skills
- Experience with statistical programming language (R or Python) – particularly R - is an asset
- Qualitative research experience is an asset

While not required, candidates who have a background in data science and computer science and are interested in practical programming experience can assist with a range of tasks, from big data mining to the development of front-end data visualizations and graphics. In the past, we've had programmers help build databases, scrape public data sources, and develop machine learning models. To focus on these types of projects, experience with statistical programming languages – particularly R or python – is strongly preferred. The Fellow would share their experiences and insights, and if applicable, any analyses and visualizations on the UESI blog and/or in case study boxes featured as part of the report.

About the Fellowship/What the Fellowship Offers

The Samuel Centre for Social Connectedness (SCSC) Social Connectedness Fellowship empowers young people and people with a variety of different types of lived experience to partner with groundbreaking organizations from around the world to carry out innovative research on social isolation and belonging.

SCSC defines belonging as connection to the 4 Ps: people, place, power, and purpose. This is to say that belonging comes through our relationships with other people as well as through our rootedness in nature, our ability to influence social, political and economic decision-making, and our capacity to find shared meaning and purpose in our lives. The Fellowship offers a unique opportunity to apply the lens of Belonging, thinking intersectionally, and holistically about the problems of the 21st century.

These are paid positions, starting on **May 6, 2024**, and ending on **September 27, 2024**. From **May – August the position is full time, 35 hours per week** and in **September the hours are reduced to part time, 10-20 hours per week**.

SCSC Offers:

- Competitive wages adjusted according to each Fellow's geographic location and experience.
- Applicants to this project can expect a range of 22-28 CAD per hour.
- Opportunity to work with national & international community partners
- Capacity building, skills development, & mentorship
- Ability to network, and be part of an international cohort
- All Fellowship works are published on the SCSC website
- The Fellow's work will be supported by regular supervision meetings with both organizations, and a 1-week long orientation at SCSC.

Program Requirements:

- Be able to work at least 4 hours per day (in alignment with the 9-5 workday) in Eastern Standard Time to ensure overlap with the Toronto-based team.
- Be ready to engage in regular online meetings, check-ins, capacity building sessions, and work remotely.
- Ability to take initiative, manage their time effectively, work independently, and draw from different resources to support their work.
- Have a passion for research and building a more inclusive, belonging-oriented world.

EQUITY STATEMENT

The Samuel Centre for Social Connectedness is an equal opportunity employer, and we encourage applicants to apply even if they do not meet all the criteria. We believe all candidates have something to bring to the organization and the role. If you have skills outside the job description that you think can benefit the project, let us know in your cover letter. We encourage all equity-seeking groups, such as immigrants, Black and Indigenous communities, people of color, women, young people, 2SLGBTQ+ community members, people with disabilities, and people who have been justice-impacted to apply.

Please tell us if you need accommodation throughout the application process and we are happy to support you.

You can email any accommodation requests to scfellowship@scscglobal.org