A Community-Owned / Community-Driven Approach to Air Quality Monitoring

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Introduction

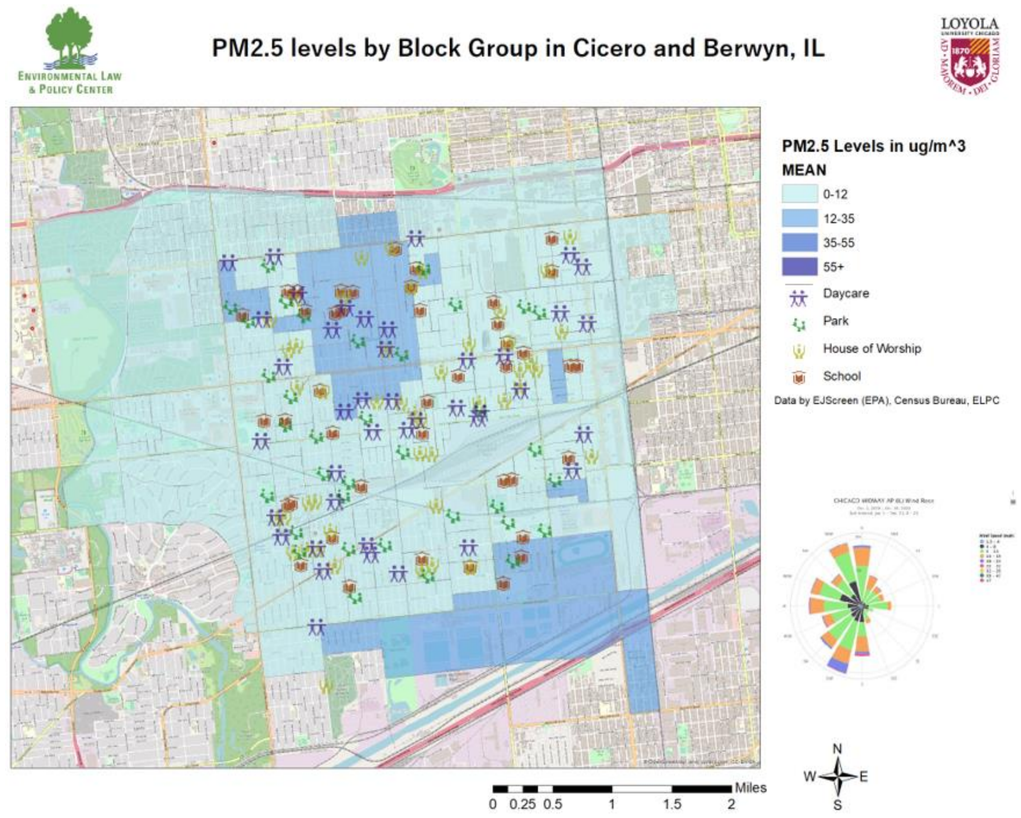
A central question in environmental justice is how to re-imagine collaborations between outside academics and professionals and frontline community organizers. Academic and professional experts' technological data is devoid of meaning unless contextualized within community residents' lived experiences. Community residents' ability to influence regulatory policy is limited without access to scientific data. Race, class, and asymmetrical vulnerabilities inherent in social location must be acknowledged and negotiated as a pre-condition to building trust.

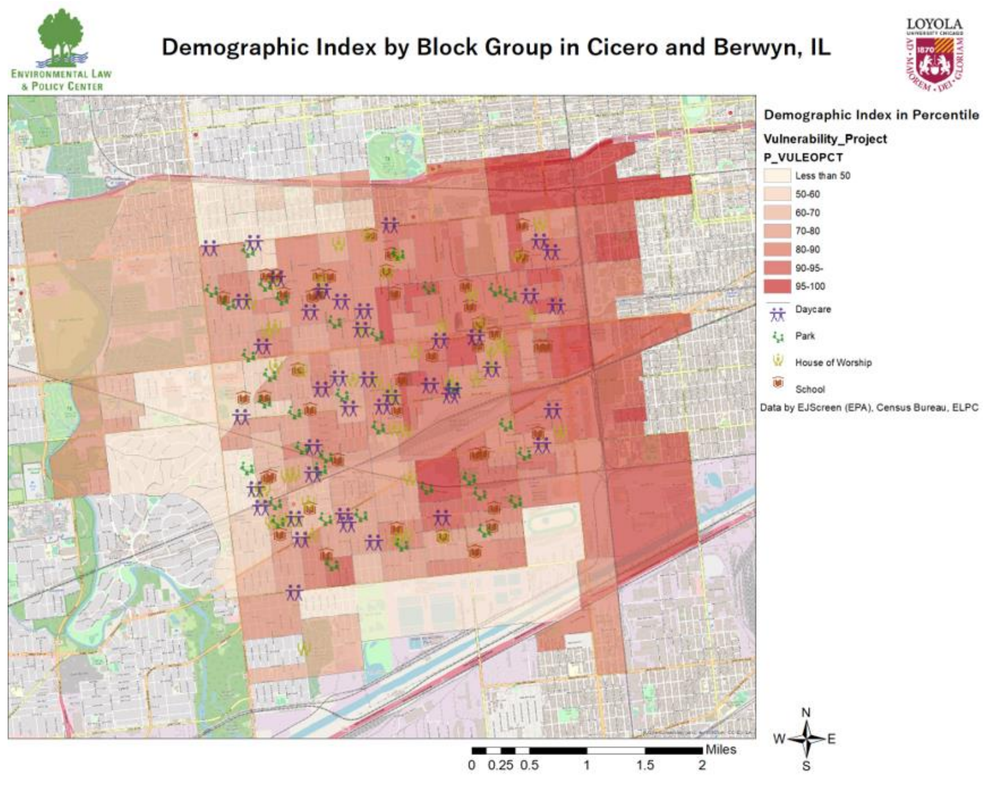
Methods

The main focus of this participatory action research project is building resilience through strengthening social capital. Capstone students, ENVS 204 students, and university faculty reflected critically on how community-university partnerships can not only produce data but can build lasting relationships. As David Aldrich (2012) suggests in *Building Resilience: Social Capital in Post-Disaster Recovery,* and as was borne out in the 1995 Chicago heat wave, social ties are the key to our collective survival in a changing climate.

In the fall semester of 2020, SES capstone students and their faculty mentors responded to a request for technical support from an environmental justice organizer in Cicero. The students joined community residents from Cicero and Berwyn and staff from the Environmental Law and Policy Center to monitor levels of fine particulate matter (PM2.5). Over a three-week period from October 12 - November 1, 2020, five community members and five Loyola students walked planned routes throughout Cicero and Berwyn with handheld AirBeam monitors capturing PM2.5 levels in the ambient air. The routes were designed to collect data from potential point sources of pollution, such as the Burlington Northern Santa Fe (BNSF) rail yard, as well as near highway exits, as vehicular traffic is a significant non-point source of PM2.5. Following data collection, the spatial distribution of the data was analyzed using the interpolation method Kriging and the averages of the PM2.5 levels were displayed by block groups, with the EPA's EJScreen vulnerability index overlayed. The map was modified to show where residents live, work, learn, pray, and play. Rather than see the data as an end in itself, the process prioritized data collection as a means towards relationship-building and mutual learning. The project is now entering its second phase.

Aldrich, D. P. (2012). Building resilience: Social capital in post-disaster recovery. Chicago, IL: University of Chicago Press.





Next Steps

Fine particulate matter can have both acute and chronic effects on every system of the body. Further air quality monitoring will expand to include NOx and VOCs in addition to fine particulates. We will focus on emissions from diesel truck traffic at the newly established Amazon warehouse in Cicero. Qualitative measures of resident's perceptions of environmental quality in Cicero will be integrated with the quantitative data.

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