# Crowd+AI Tools to Map, Analyze, and Visualize Sidewalk Accessibility for Inclusive Cities

Jon E. Froehlich (PI), University of Washington; Yochai Eisenberg (Co-PI), University of Illinois Chicago; Joy Hammel (Co-PI), University of Illinois Chicago; Delphine Labbé (Co-PI), University of Illinois Chicago; Judy Shanley, (Co-PI), Easterseals

IRG-Track 1, FY2021

## Project Overview

- Develop and evaluate a suite of open-source sidewalk accessibility analysis and visualization tools
- Assist urban planners and transit agencies in development of ADA transition plans
- Enable pedestrian and disability advocates to examine geo-spatial patterns of inaccessibility and review government progress
- Help people with disabilities make safe, accessible mobility decisions
- A co-design approach with both disability organizations and local government stakeholders
- Based in the Chicago metropolitan area

## Community-Identified Problem

Lack of reliable data on where sidewalks exist and their quality:

- Limits how sidewalk accessibility can be studied in cities
- Limits the ability for communities, advocacy groups, and local governments to understand, discuss, and make informed planning decisions


COMMUNITY WORKSHOPS
Understand perceptions around sidewalk data collection tools

DATA VALIDATION
Compare data from the crowdsourcing application and other form of data

DEPLOYMENT & EVALUATION
Of Project Sidewalk tool in communities around the Chicago area

SERVICE-LEARNING CURRICULUM
Development & implementation school curriculum in Chicago areas

WORKFORCE DEVELOPMENT
Exploring methods to involve people with mobility disabilities as data collectors and evaluators

**DATA ANALYSIS & VISUALIZATION TOOLS**
Develop and evaluate the use of sidewalk data analysis and visualization tools based on feedback from stakeholders

## Intellectual Merits

- Advance the understanding of stakeholder needs and opportunities for socio-technical tools to support planning of accessible sidewalks, civic engagement, advocacy, and trip planning.
- Development and evaluation of crowd+AI sidewalk data collection and assessment techniques to improve scalability, reliability, and better support diverse stakeholder needs.
- Development and evaluation of a suite of open-source urban accessibility analysis and visualization tools.

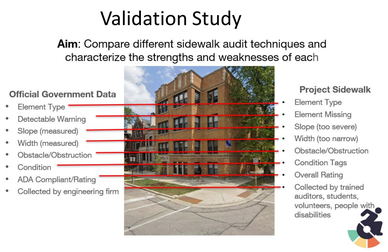
## Project Partners

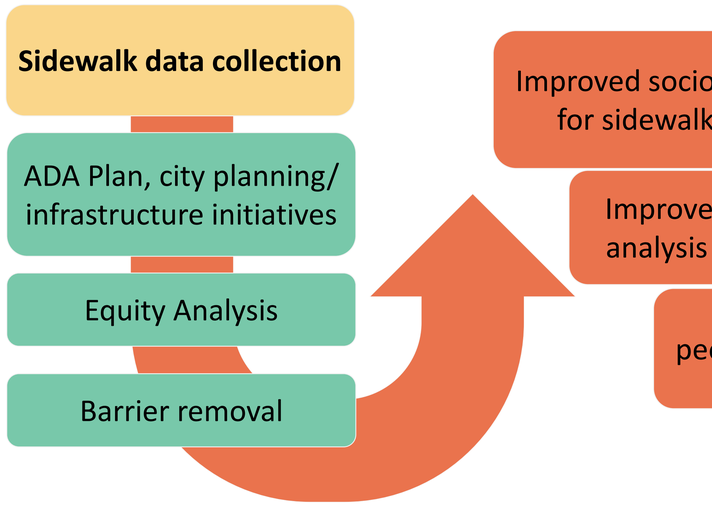
We have involved many organizations in the Chicago region as partners in our project. Both those in the original proposal and many new partners.

- Progress Center for Independent Living
- Access Living of Metropolitan Chicago
- Achieving Independence and Mobility (AIM) Center for Independent Living
- The Arc of Illinois
- The Chicago Metropolitan Agency for Planning (CMAP)
- Metropolitan Mayor Caucus
- Metropolitan Planning Council

## Major Activities To Date

1. Project Sidewalk Tool Development and Deployment
2. Computer Vision Models and Experiments for Semi-automatic Sidewalk Assessment
3. Advisory board development and expansion
4. Workshops with key stakeholders
5. Crowdsourcing validation study
6. Preliminary sidewalk equity study
7. Service learning




## Next Steps

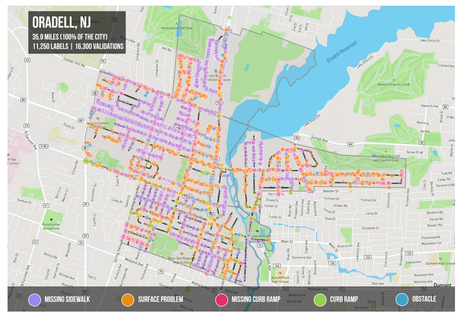
1. Expand deep learning work
2. Cross-regional sidewalk equity study
3. Analyze and write-up Year 1 workshops results
4. Complete validation study and writeup results
5. Deploy and evaluate Project Sidewalk in Chicago neighborhoods
6. Plan and conduct service-learning studies

## Broader Impacts (Immediate)

- Improve sidewalks, walkability/wheelability, access to transit, and business improvement district
- Improve mobility and route planning for individuals with disabilities
- Transform how sidewalk accessibility data is collected and analyze
- Contribute to understanding the role of socio-technical tools and crowdsourcing in city planning, movement, civic engagement, and advocacy
- New avenues for K-12 and undergraduates to learn about disability, civil rights, and urban planning.

## Broader Impacts (Sustainability)

- Improve how cities plan for and improve sidewalk accessibility
- Inform how infrastructure funding is dispersed in large metropolitan area
- Reduce disparities in employment and community participation for people with disabilities




2022 S&CC Principal Investigators' Meeting
October 11th-12th, 2022

PROJECT SIDEWALK

Award #2125087