CENS Center for Embedded Networked Sensing

Engaging Residents in Community Data Gathering Using Smartphone Technology: A Proof-of-concept Pilot in Boyle Heights

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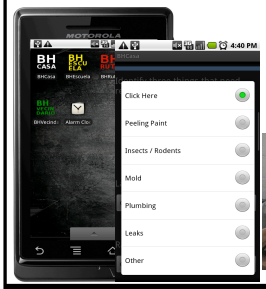
Introduction: Participatory Sensing Surveys for Community Health, Education and Planning

Participatory Sensing is an approach to data collection and interpretation in which individuals, acting alone or in groups, use their personal mobile devices and web services to systematically explore interesting aspects of their worlds, ranging from health to culture. In June of 2010, twenty community based organizations in Boyle Heights (a primarily low and moderate-income Latino neighborhood in East Los Angles) partnered with UCLA|CENS to pilot a community driven, smartphone-based, data gathering campaign. Community organizers authored 5 brief, bilingual surveys for residents to answer during the course of their everyday activities.

Healthy Communities: Building a Healthy Boyle Heights

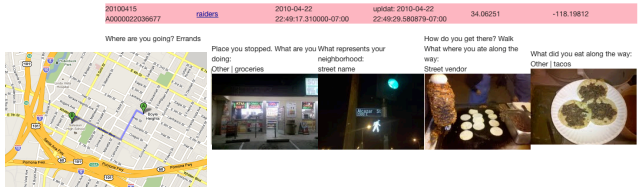
Boyle Heights Community Engagement Committee and CENS, piloted a participatory sensing project in which **68 Boyle Heights community members documented conditions in their neighborhoods, schools, workplaces and homes** during course of 6 weeks.



*"Typically planning processes and planners come in and plan with an outside perspective instead of **looking at existing patterns of resident flow**."*

Smartphones survey apps for participants to assess a range of health, safety, and living conditions

- Apps automatically **upload photographs and location info** to a secure Internet-accessible database, along with participants' **multiple choice and free text answers**
- Database supports **mapping and analysis by community**



Initial Participation Findings

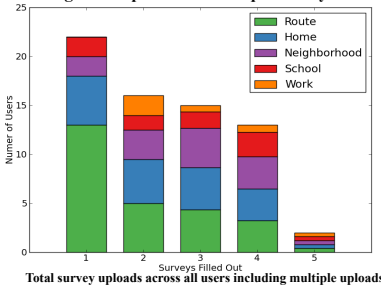
The pilot provided initial evidence that participatory data collection using smartphones can be successfully applied by community organizations to **engage residents in civic and public health initiatives** [1]. Community organizers found the approach to be engaging, accessible, and effective (particularly for young adult populations), but that future projects would benefit from increased focus and planning for how data will be analyzed once collected, including better tools for data exploration and presentation.

Survey questions:

- **Ruta/Route:** Destinations, transportation means, stopping points, food consumption
- **Casa/Home:** Required repairs/concerns, food consumption, home use
- **Vecindario/Neighborhood:** neighborhood representation, safety
- **Escuela/School:** conditions, support, food habits
- **Trabajo/Work:** Type, concerns, satisfaction

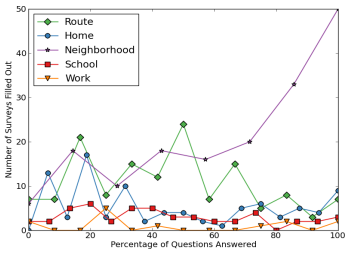
Participation:

- **68 users total, 462 surveys uploaded**
- **Route app had a 75% participation rate**
- **Average user uploaded 6.85 surveys**
- **Average user uploaded 2.4 unique surveys**

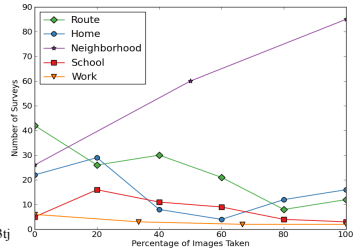


Total survey uploads across all users including multiple uploads.

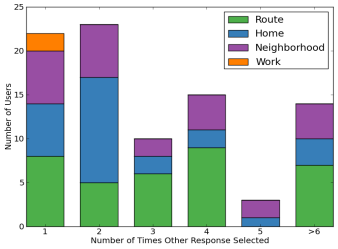
Percentage of questions filled out per survey submitted. The neighborhood app was the most completed survey.



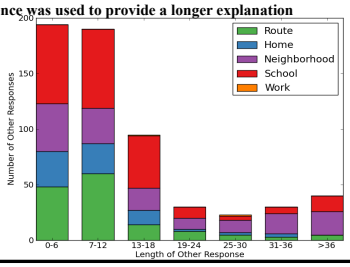
Percentage of images taken per survey submitted. 60 participants took at least 1 picture. Average images per user 11.25.



Optional 'other' response allowed users to fill in their own answer. All school responses were free text. Percentage of 'other' responses by app: Route: 28.21%, Home: 16.22%, Neighborhood: 27.00%, Work, 1.69%.



Majority of 'other' responses were short, indicating multiple choice selections were insufficient. However, 20% of the free responses were greater than 18 characters, indicating phrase or sentence was used to provide a longer explanation



[1] Acker, Amelia; Lukac, Martin; & Estrin, Deborah. (2010). Participatory Sensing for Community Data Campaigns: A case study. UC Los Angeles: Center for Embedded Network Sensing. Retrieved from: http://escholarship.org/uc/item/95t603tj