A Technology-Driven, Citizen Science Approach to Creating Healthier Neighborhoods

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Stanford University School of Medicine
It Takes a Village….

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Overview

• Introduction and background
• The Stanford Healthy Neighborhood Discovery Tool
• The Citizen Scientist Community Engaged Model
• Our projects and successes (so far)
• Potential and challenges of this approach
• Questions?

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Background

• Physical inactivity and poor diet are risk factors for disease
• Many residents are insufficiently active and eat poorly
• The environments in which we live, work, and play affect our opportunities to engage in healthy lifestyle behaviors
Our Approach

- Using “citizen scientists” +
- Mobile technology +
- A community engaged approach ➔ to build community capacity and drive neighborhood environmental improvement
What is Citizen Science?

- Originally developed to study large scale patterns in nature
- Enlists the public in gathering data
- Can be used to build community capacity
- Increasingly used in health & environmental research
The Stanford Healthy Neighborhood Discovery Tool

A tablet-based application used by citizen scientists to assess features of their neighborhood that promote or hinder healthful living.

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Citizen scientists conduct neighborhood assessments

Researchers identify common themes

Citizen scientists meet to prioritize issues and brainstorm solutions

Citizen scientists meet with local policy makers

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Developed and Tested with Low Income Ethnically Diverse Older Adults in the Bay Area
Successes – East Palo Alto

- Appropriated $400,000 for environmental analysis
- $1,000,000 grant to update general plan
- Targeted public health in future planning
- Creation of a safer walking environment
- Revision of streetscapes and pathways
- Improved access to senior center
- Implemented a comprehensive community sidewalk inventory and repair program

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Nuestra Voz, North Fair Oaks

**Facilitators**
- Translated into Spanish
- Approach used by older adults and adolescents

**Barriers**
Successes – North Fair Oaks

- Dialogue between residents and partners
- Community Advisory Board – trash/illegal dumping
- Community Advisory Board
- Community Resource Guide
- Citizen scientists engaged with local media

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Nuestra Voz, Mexico

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<th>Facilitators</th>
<th>Barriers</th>
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| **Similar issues:**  
  • sidewalk quality, trash, graffiti | **Differences:**  
  • Severity of barriers  
  • Approach to creating neighborhood change |

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Successes - Mexico

- Community residents engaged as citizen scientists
- Increased personal awareness/desire to take small steps to action
- Social mobilization to mount a campaign to address dog related issue
- Intergenerational discussions about ways to promote “legal street art” vs. illegal graffiti
Israel

Facilitators

• **Similar issues:**
  • trash, sidewalk quality, safety and security

• **Differences:**
  • wild boars not dogs!

Barriers
Successes - Israel

- Consensus-building among Israeli Jewish and Arab residents concerning environmental and community strategies to improve neighborhood walkability

- **BECAUSE** environmental issues affect everyone

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FEAST
(Food Environment Assessment Using the Stanford Tool)

• Barriers experienced by low-income older adults to accessing healthy food:
  – transportation/safety
  – access to fresh/affordable foods
  – lack of awareness about the variety of food assistance and transportation services available
Successes - FEAST

• Sustained actions on behalf of the participants:
  – 84% reported either:
    • contacting a local policy maker
    • using a new service (food stamps, shuttle service)
    • sharing information with a friend

• Residents requested additional healthy community advocacy training
  – Forum attended by representatives of the City and public transportation
  – Painting of a fire hydrant red zone in 4 days!
Other applications of the Discovery Tool - Engagement Model

- Assessing Rural Neighborhoods
  - Different assets and barriers in rural vs urban locales
- Assessing the experience of Farmer’s Market shoppers
  - Contextual factors such as product presentation and social interactions important
- Assessing an urban Pop Up Park
  - To be tested – can citizen scientists code their own data?
- Assessing “Sunday Streets” program in San Francisco
  - Work in progress
Possibilities of this Approach

• Helps articulate priorities and values (bilaterally)
• Creates mutual understanding in a collaborative environment
• Provides a mechanism for engaging participants & policy makers
• Allows community residents to be part of the problem identification process & contributors to solution finding
• Informs environmental change to benefit local communities
• Uses rich quantitative & qualitative data
• Uses a multi-level approach spanning individuals to policies
• Provides a voice to those who may be marginalized
Challenges of this Approach

- Technology related:
  - “Digital divide”
  - Simplification for low literacy, tech naïve users
- Community engagement related:
  - Recruitment
  - Participant safety
  - Building trust
- Accessibility
- Scalability
- Sustainability
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