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I-WALK: An Innovative Approach to Community Walkability

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I-WALK: An Innovative Approach to Community Walkability

Abstract

One way of combating rising obesity rates and decreasing physical activity levels among children is to promote active transportation to and from schools. The award-winning I-WALK program provides a comprehensive framework for addressing community walkability and related infrastructure. The program uses a unique and innovative methodology that combines volunteer data collection workshops; classroom-based teacher tallies; and a dynamic Web-based survey that brings parents and children together to discuss school transportation issues. The program's success demonstrates the benefits of coalition-building and community-based participatory research approaches to designing healthy and safe local environments.

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Introduction

In recent decades, communities across the United States have been affected by the widespread overweight/obesity epidemic. It has been widely published that decreased levels of physical activity among children and adults are one of the primary factors contributing to the problem (French, Story, & Jeffrey, 2001; Heelan, Combs, Abbey, Burger, & Bartee, 2013). Between 1969 and 2009, the percentage of children who lived within one mile of school and usually walked or biked to school dropped from 89% to just 35%. At the same time, the prevalence of obesity has almost tripled since 1980 (National Safe Routes to School Center, 2011). Previous studies have drawn correlations

between community walkability and the relative activity level of residents (Bassett & Reardon, 2007; Giugliano & Carneiro, 2004; Sheehy & Dharod, 2008).

National programs such as Safe Routes to School (SRTS) facilitate active transportation and help counteract the obesity trend by promoting healthy behaviors. While some larger school districts are well positioned to implement these programs, many districts lack access to the necessary financial, technical, and leadership development assistance. To help meet these needs, Cooperative Extension, in collaboration with the Iowa Department of Public Health, developed the Iowans Walking Assessment Logistics Kit (I-WALK). This article explores the development and implementation of this innovative statewide program, the results, and the unique aspects of the program that might be replicated by Extension professionals elsewhere.

Project Overview

As an outreach program developed by the Community and Economic Development Extension and Outreach unit at Iowa State University and the Iowa Department of Public Health, the primary goal of I-WALK (http://www.i-walk.org) is to develop a comprehensive framework to aid communities in promoting active transportation. The mission is to improve children's safety while walking and bicycling to school. The I-WALK program is the first of its kind and delivers a sustainable model allowing community coalitions to continuously share, update, implement, and evaluate their local SRTS plans. The communicative technologies developed for the program allow for public review of the collected data. The coalitions formed during the initial stages of the project, as well as the utility of the data collected, have allowed several of the communities to obtain grant monies for SRTS and related projects, including walking school bus programs, bike rodeos, and traffic engineering grants. The success of the project in schools has led to the development of various spin-off projects, including an I-WALK for older adults.

Methodology

To help community coalitions collect, visualize, and evaluate SRTS information, several Web-enabled spatial technologies were developed and implemented into the I-WALK framework:

1. Mapping infrastructure
2. Inventorying/visualizing student routes
3. Mapping perceived behavioral/environmental issues
4. Identifying opportunities for improvement
5. Conceptualizing safe routes options

The program uses a variety of volunteer community-participation methods to collect data. While all of the program's elements incorporate crowdsourcing, the primary methodology developed for I-WALK to collect infrastructure information uses facilitated-Volunteered Geographic Information (f-VGI). Whereas typical VGI allows users to provide voluntary, unsolicited geographic information on their

own, facilitated-VGI uses predefined criteria and prompts users to respond to a set of queries or directives that in turn help guide the range, type, and spatial extent of the information gathered. Building upon existing community GPS assessment projects (Schlossberg, Evers, Kato, & Brehm, 2012), I-WALK is innovative in the use of GPS/GIS-enabled smartphone and Web technologies (ESRI ArcGIS, Fulcrum, and Leaflet) to document, communicate, and visualize the social and built environments around schools.

During a 1-day infrastructure-mapping workshop, volunteers are trained to use smartphones to document and photograph barriers and opportunities. The hands-on data collection process gives participants the opportunity to understand the value of connectivity from a pedestrian's perspective and experience problem areas firsthand, particularly in landscapes that they would normally only observe from inside a vehicle. Once trained, volunteers walk the area surrounding the school, recording data at each intersection, midblock, and whenever they come across a feature that affects walkability in the neighborhood. The technological process allows data to be viewed on a composite map as they are collected, allowing the project team to quickly identify areas that still need to be assessed. Once all of the data have been collected, the design team reviews, visualizes, and analyzes the data and prepares reports identifying areas of concern and opportunity for each school. Local SRTS coalitions use these data to secure funding, set priorities and organize programs.

Figure 1.

Smartphone Mapping Interface Allows Volunteer to Locate on a Map a Form-Based Assessment That Can Optionally Include Photos

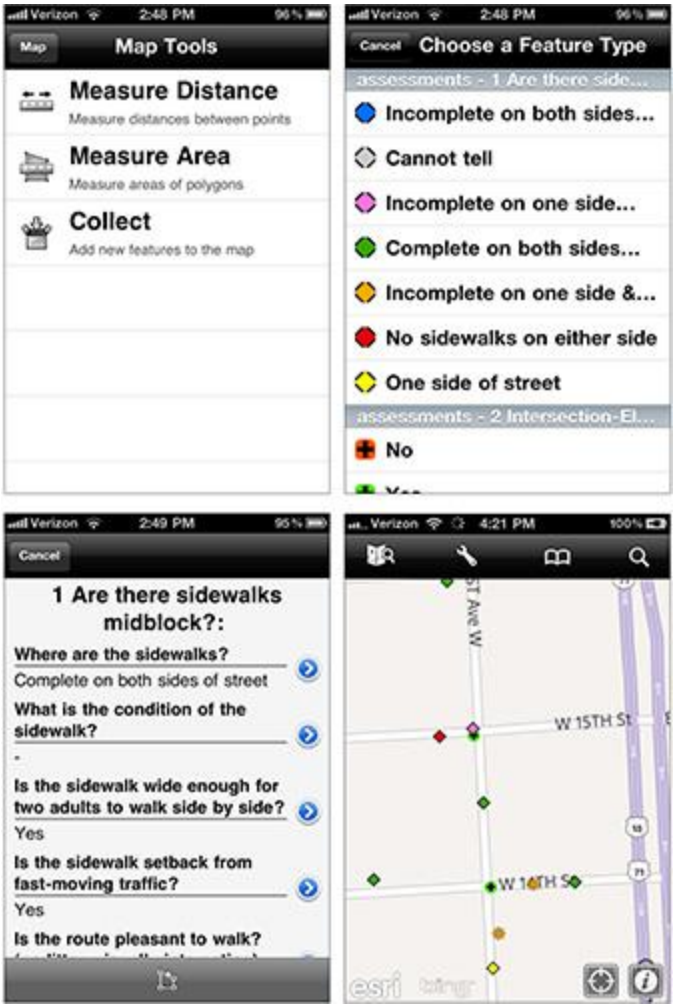


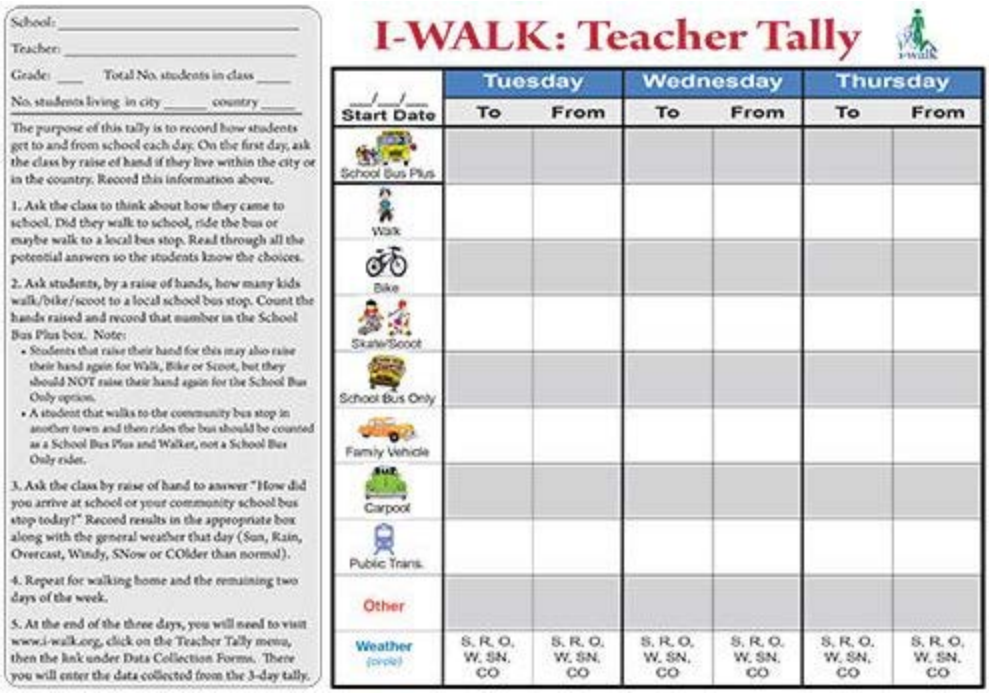
Figure 2.

Composite Web Map of All Points Collected During Workshop Displayed Using ArcGIS.com Technology

Teacher tallies are performed in the classroom and allow teachers to record the mode of transportation used by students daily, along with related factors such as weather. These tallies provide the baseline data needed to determine any change in walking or bicycling to and from school. To better understand the activity levels of students who walk to a central bus location, a category of "Bus Plus" has been added to the tally. Following the tally, a local SRTS volunteer enters the numbers into a website where the results are calculated and compared to previous tallies and made available online.

Figure 3.

Teacher Tally Form Used to Collect Student Data



School: _____

Teacher: _____

Grade: ___ Total No. students in class ____

No. students living in city _____ country ____

The purpose of this tally is to record how students get to and from school each day. On the first day, ask the class by raise of hand if they live within the city or in the country. Record this information above.

1. Ask the class to think about how they came to school. Did they walk to school, ride the bus or maybe walk to a local bus stop. Read through all the potential answers so the students know the choices.

2. Ask students, by a raise of hands, how many kids walk/bike/scoot to a local school bus stop. Count the hands raised and record that number in the School Bus Plus box. Note:
- Students that raise their hand for this may also raise their hand again for Walk, Bike or Scoot, but they should NOT raise their hand again for the School Bus Only option.
- A student that walks to the community bus stop in another town and then rides the bus should be counted as a School Bus Plus and Walker, not a School Bus Only rider.

3. Ask the class by raise of hand to answer "How did you arrive at school or your community school bus stop today?" Record results in the appropriate box along with the general weather that day (Sun, Rain, Overcast, Windy, SNow or COlder than normal).

4. Repeat for walking home and the remaining two days of the week.

5. At the end of the three days, you will need to visit www.i-walk.org, click on the Teacher Tally menu, then the link under Data Collection Forms. There you will enter the data collected from the 3-day tally.

I-WALK: Teacher Tally

___/___/___ Start Date	Tuesday To	Tuesday From	Wednesday To	Wednesday From	Thursday To	Thursday From
School Bus Plus						
Walk						
Bike						
Skate/Scoot						
School Bus Only						
Family Vehicle						
Carpool						
Public Trans.						
Other						
Weather (circle)	S, R, O, W, SN, CO	S, R, O, W, SN, CO	S, R, O, W, SN, CO	S, R, O, W, SN, CO	S, R, O, W, SN, CO	S, R, O, W, SN, CO

The parent/child survey builds upon the national SRTS survey by including questions relevant to rural schools. It is designed as an enhanced Web-based spatial survey that facilitates discussion between parents and children regarding their respective perceptions and behaviors related to transport to/from school and mapping the direct routes taken to school.

Figure 4.

Routes Used by Children to Get to School Are Compiled on a Map to Illustrate the Most Widely Used Route Segments

Results

The ongoing program is successful at public and private schools in both urban and rural settings. Currently 31 schools representing 41 communities participate in I-WALK. To date, 325 Iowans have taken part in forming local coalitions, while 450 community volunteers (including residents and students) have collected more than 900 photos during the infrastructure assessment workshops using the customized GIS-enabled smartphone app and collection process developed by University Extension. More than 2,100 parent/child surveys with more than 2,500 mapped locations of perceived barriers/opportunities and 850 identified routes to school along with 475 classroom teacher tallies have been submitted.

Not only are students who currently attend the schools affected, but also those students attending in future years. I-WALK generates positive impacts for an audience that is much broader than just the identified schools. The program serves as a model for creating more walkable communities and builds partnerships between local coalitions and ISU Extension and Outreach as they work to create environments that promote healthy lifestyles. The program is currently being modified to include a more detailed sidewalk assessment and to allow the program to be implemented outside of Iowa.

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ESRI JavaScript ArcGIS API for Developers: https://developers.arcgis.com/en/javascript/

ESRI ArcGIS Collector: http://www.esri.com/software/arcgis/smartphones/collector-app

Fulcrum: http://fulcrumapp.com/

Leaflet: http://leafletjs.com/
