

# **Development and testing of mobile technology for community park improvements: Validity and reliability of the eCPAT application with youth**



Active Living Research, February 3, 2016

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# Community Advocacy for Parks



- Modifying or improving parks a promising solution to the obesity crisis
- Will require the interest of multiple constituencies
- Participatory action research (PAR) emphasizes community participation through collective inquiry, data collection, and action to address community based issues
- Citizens often do not have the knowledge or preparation to make meaningful contribution



# Community Park Audit Tool (CPAT)



- Comprehensive yet user-friendly
- Developed with and for community members
- 6 pages with 4 sections:
  - Park information
  - Access and surrounding neighborhood
  - Park activity areas
  - Park quality and safety
- Concerned with presence/absence and ‘usability’ and ‘condition’ of most park elements
- Quick, reliable method for auditing parks for their potential to promote PA

**COMMUNITY PARK AUDIT TOOL**

**Instructions**

Before you begin, review the brief training guide and audit tool and try to locate a map of the park. Then, go to the park and proceed with filling out this audit tool. The tool (6 pages) is divided into four sections that focus on different aspects of the park environment. Additional instructions are provided within each section.

**Tips for Using the Community Park Audit Tool (CPAT)**

- Drive, bike, or walk around the park to get a feel for the contents and characteristics of the park and surrounding neighborhood.
- The CPAT is organized such that questions on similar topics are grouped into logical sections and the four sections are arranged in the order that you might encounter them during your audit. However, you may need to switch between sections or pages as you complete the park audit. Therefore, it is important to review and be familiar with all of the tool sections and questions before you begin your audit.
- It is also important that you check back through the full document (6 pages) when you are finished to ensure you have completed all the sections and questions.
- Space is provided at the end of each section (and some individual questions) where you can take notes or record comments as you complete your audit. The margins or back of each page (if copied single-sided) can also be used to take notes, but please be sure that all relevant information is transferred to appropriate places on the tool and that all questions are fully answered using the format provided.
- If you see anything during your audit that requires immediate attention, contact the local parks department.

**Section 1: Park Information**

Park Name: \_\_\_\_\_ Observer Name or ID: \_\_\_\_\_

Park Address/Location: \_\_\_\_\_

Were you able to locate a map for this park? ☐ No ☐ Yes

Was the park easy to find outside? ☐ No ☐ Somewhat ☐ Yes

Date (m/d/y): \_\_\_\_/\_\_\_\_/\_\_\_\_

Approximate Temperature: \_\_\_\_ °F Weather: ☐ Clear ☐ Partly Cloudy ☐ Rain/Snow

Start Time: \_\_\_\_ am or pm (circle) End Time: \_\_\_\_ am or pm (circle) Length of visit: \_\_\_\_ min

Comments on Park Information: \_\_\_\_\_

Community Park Audit Tool Page 1 of 6

# Getting Youth Involved



- Youth can and should be involved in healthy community change efforts
  - Youth voices especially powerful
  - Positive youth development
  - Future public health leaders
- Youth advocacy for obesity prevention the next wave of social change for health
- Often an under represented group



# Youth Empowerment through Technology



- **Benefits of technology within youth PAR frameworks**
  - Increases self-efficacy
  - Fights apathy/improves motivation
  - Provides meaningful participation
  - Increases youth voice
  - Improves youth-adult communication
  - Promotes equitable power-sharing (increased youth control)
  - Provides political or social agency
  - Improves research capabilities
  - Increases civic engagement

# Purpose



**To describe the development and validity and reliability testing of an electronic version of the Community Park Audit Tool (eCPAT) for use by youth**

# eCPAT Project Phases



**Review of literature on technology, youth, and health advocacy**



**Key informant interviews with academic and community leaders**



**Development of eCPAT app for Android tablets**



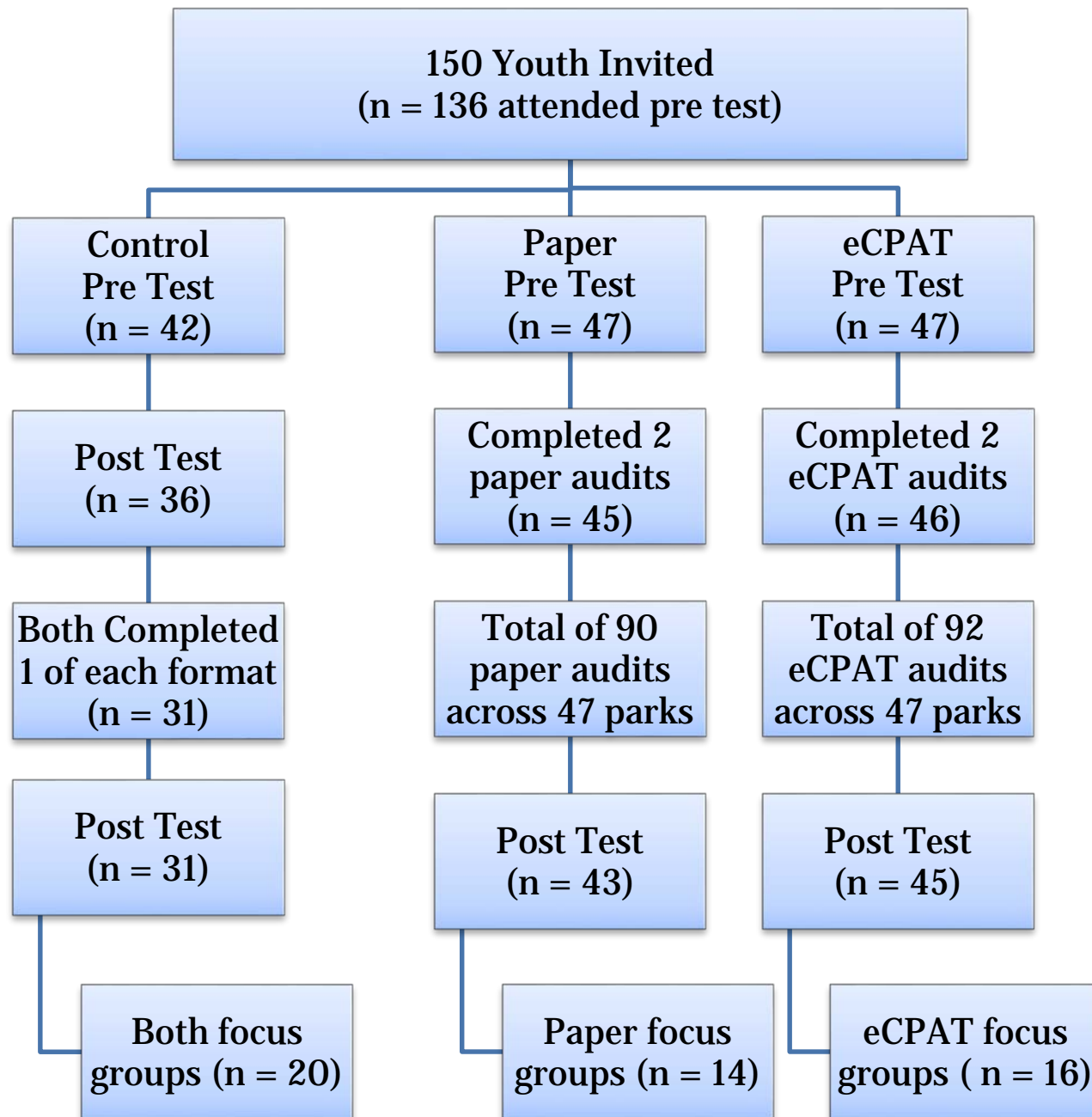
**Beta testing of eCPAT app**



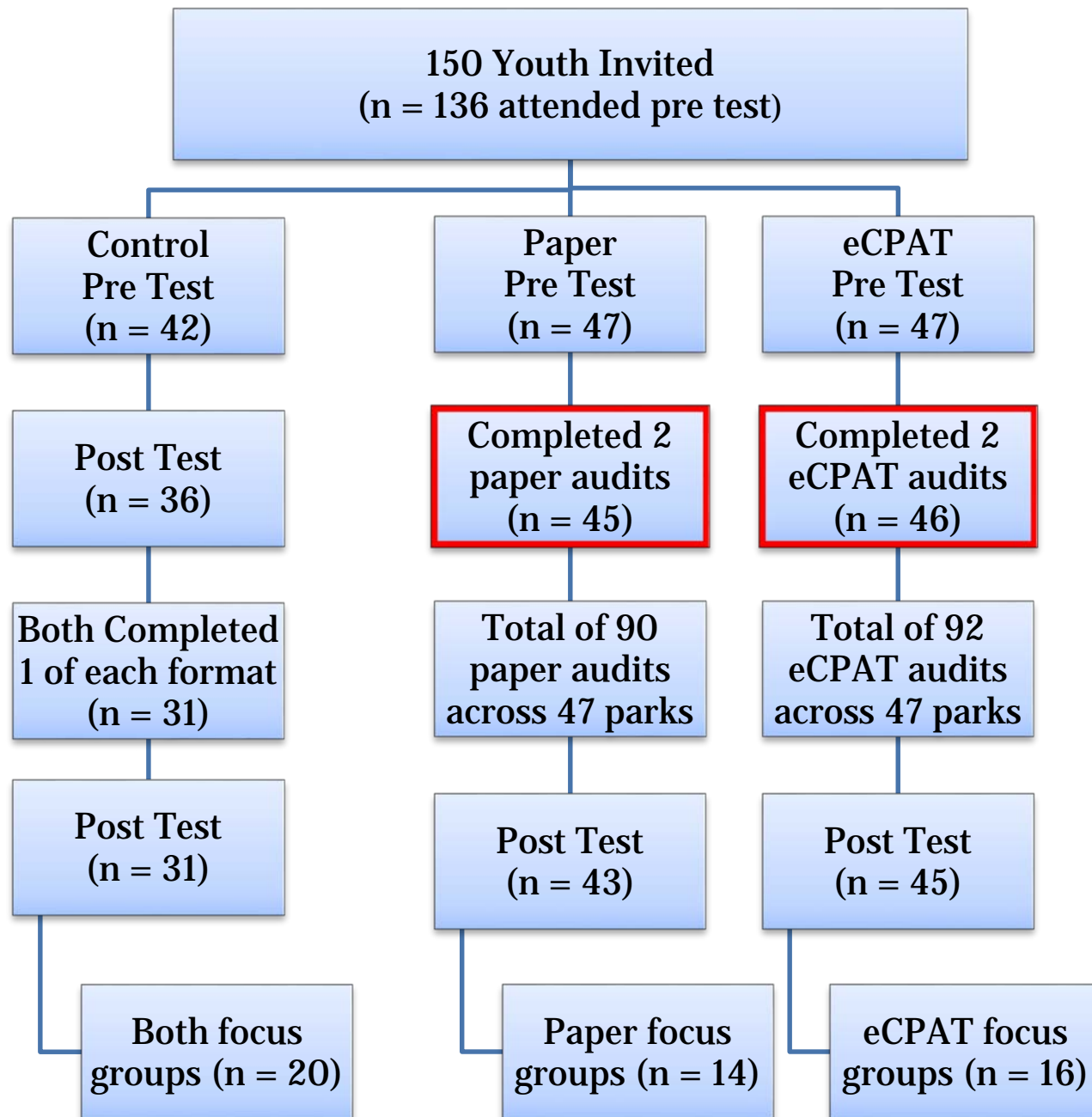
**Large scale evaluation of eCPAT app across parks in Greenville, SC**



**Evaluation of youth experience through surveys and focus groups**





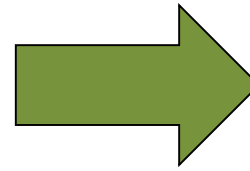


## eCPAT Development

- Literature review
- Key informant interviews
- Systems requirement analysis
- Application software design
- Program coding
- Alpha (capacity) testing
- Database development



Data collection on  
Mobile Device + App



Server for data analysis



eCPAT

Community Park Audit Tool



### IMPORTANT AUDITING TIPS

- Drive, bike, or walk around the park to get a feel for what's in the park and the neighborhood around the park.
- The eCPAT questions are grouped in sections in the order that you might come across them in a park. However, you may need to switch between sections as you complete your park audit. Therefore, it is important to look through the tool before you begin.
- When you are finished, go back and make sure you have completed all the sections and questions.
- There is space at the end of each section where you can type comments as you complete your audit.
- Also, use the legend to the right to identify the various icons in the eCPAT and their uses.
- If you see anything that requires immediate attention, contact the local parks department.

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#### Legend



Incomplete Section



Complete Section



View More Information



View Picture Example



Take Photo



Return to Home



Administrative

welcome user06!

START NEW AUDIT

LOGOUT

AUDITS



eCPAT

Community Park Audit Tool



Park Info

Access & Neighborhood

Activity Areas

Quality & Safety



## Park Information

▶ Park Info



▶ Weather



Comments on Park Information



## Access and Neighborhood

### ▼ Instructions

This section asks about accessing the park and about the neighborhood surrounding the park. Several questions include follow-up responses if you answered yes. There are spaces for comments at the end of the section. When thinking about the surrounding neighborhood, consider all areas that you can see from inside of the park.

When rating the access and surrounding neighborhood, please use the following definition:

- **Useable:** everything necessary for use is present and nothing prevents use (e.g., sidewalks are passable)

▶ Access



▶ Park Signs



▶ Entry points



▶ Public Transit



▶ Parking Types



▶ Sidewalks



# Methods

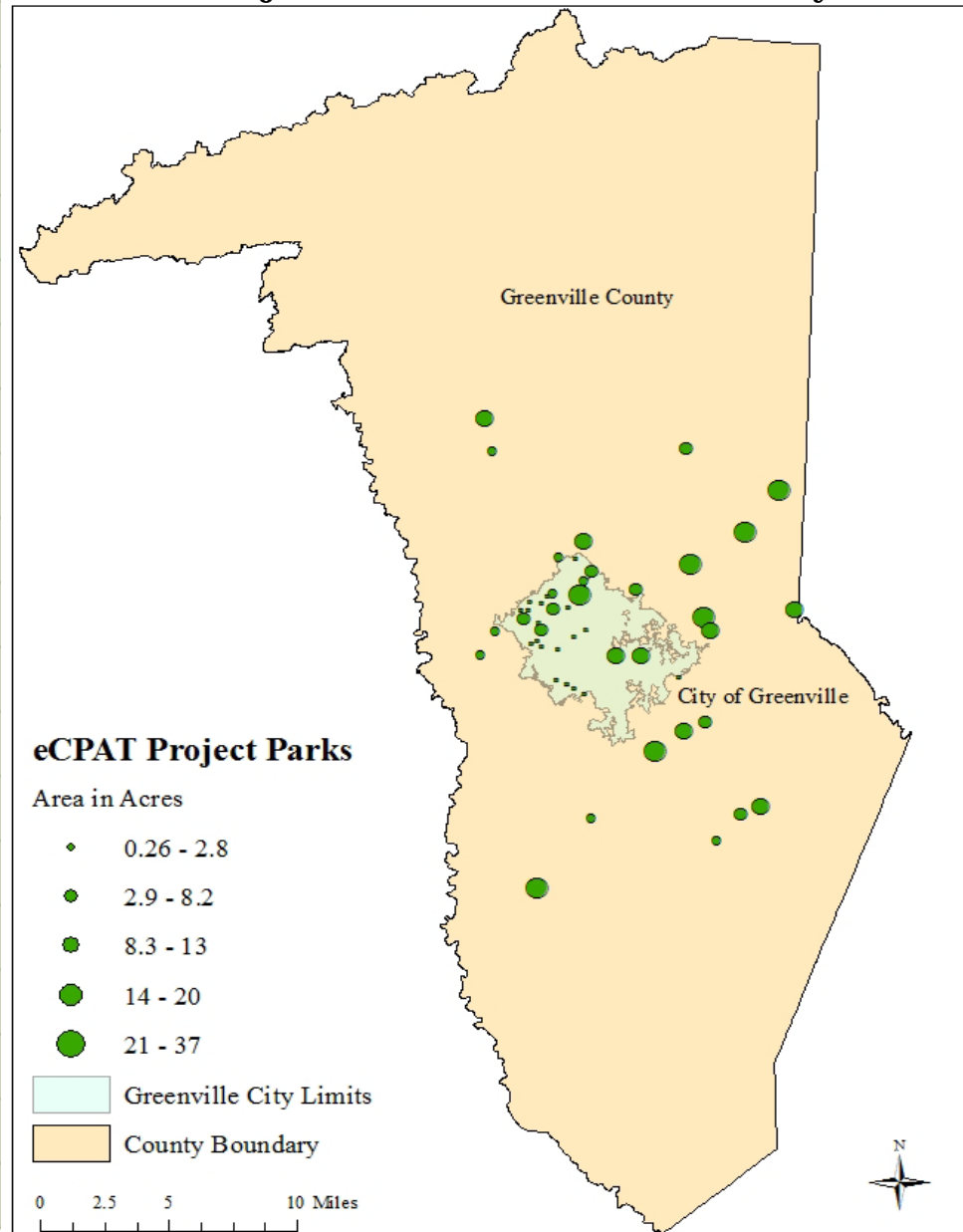


- Sample of 47 diverse parks in Greenville County
- Analyzed park audit data from youth who used eCPAT application
- **Criterion validity** analysis compared youth eCPAT audit to gold standard eCPAT audit
- **Inter-rater reliability** analysis compared youth eCPAT auditor 1 to youth eCPAT auditor 2
- Cohen's kappa and percent agreement statistics
- Only explored items that had at least 3 pairs of park audit data (Saelens et al, 2006)

## eCPAT Project Parks – Greenville County, SC

### Youth Participant Characteristics

| Characteristic            | n (%)             |
|---------------------------|-------------------|
| <b>Total</b>              | <b>52 (100.0)</b> |
| <b>Age</b>                |                   |
| Middle school (12-13 yrs) | 21 (42.0)         |
| High school (14-18 yrs)   | 29 (58.0)         |
| <b>Gender</b>             |                   |
| Male                      | 19 (36.5)         |
| Female                    | 33 (63.5)         |
| <b>BMI</b>                |                   |
| Underweight (< 5%)        | 3 (6.0)           |
| Normal (5-84.99%)         | 42 (84.0)         |
| Overweight (85-94.99%)    | 2 (4.0)           |
| Obese (>=95%)             | 3 (6.0)           |
| <b>Race</b>               |                   |
| White                     | 33 (63.5)         |
| Black                     | 14 (26.9)         |
| Other                     | 1 (1.9)           |
| 2 or more races           | 4 (7.7)           |



# Results



- 90 items examined using Cohen's kappa
- 41 items examined using percent agreement

## Validity

- 40% of items had moderate to perfect kappas
- All but 2 items had excellent percent agreement

## Reliability

- 41% of items had moderate to perfect kappas
- All but 4 items had excellent percent agreement

## eCPAT Validity and Reliability

| eCPAT Item                               | Validity         |                  |           | Reliability      |                    |           |
|--|------------------|------------------|-----------|------------------|--------------------|-----------|
|  | Pairs of ratings | Kappa            | %         | Pairs of ratings | Kappa              | %         |
|  |                  |                  | agreement |                  |                    | agreement |
| Playground#                              | 47               | 0.735            | 87.2%     | 46               | 0.721              | 87.0%     |
| Useable?                                 | 30               | N/A <sup>b</sup> | 100.0%    | 30               | N/A <sup>b</sup>   | 100.0%    |
| Good condition?                          | 30               | 0.375            | 80.0%     | 30               | 0.172              | 73.3%     |
| Distinct areas for different age groups? | 30               | 0.315            | 70.0%     | 30               | 0.068              | 66.7%     |
| Colorful equipment?                      | 30               | 0.444            | 83.3%     | 30               | 0.375              | 80.0%     |
| Shade cover for some (25%+) of the area? | 30               | 0.348            | 66.7%     | 30               | 0.267              | 63.3%     |
| Benches in/surrounding area              | 30               | 0.255            | 76.7%     | 30               | 0.259              | 86.7%     |
| Fence around area?                       | 30               | 0.645            | 83.3%     | 30               | 0.648              | 83.3%     |
| Separation or distance from road?        | 30               | 0.118            | 70.0%     | 30               | 0.167              | 73.3%     |
| Sports Field#                            | 47               | 0.615            | 85.1%     | 46               | 0.426              | 76.1%     |
| Useable?                                 | 4                | N/A <sup>b</sup> | 100.0%    | 3                | N/A <sup>b</sup>   | 100.0%    |
| Good condition?                          | 4                | 1.000            | 100.0%    | 3                | 0.000              | 66.7%     |
| Baseball Field#                          | 47               | 0.890            | 93.6%     | 46               | 0.765              | 89.1%     |
| Useable?                                 | 13               | N/A <sup>b</sup> | 100.0%    | 5                | 0.000 <sup>b</sup> | 80.0%     |
| Good condition?                          | 13               | 0.114            | 53.8%     | 5                | 0.545              | 80.0%     |
| Swimming Pool#                           | 47               | N/A <sup>b</sup> | 100.0%    | 46               | 0.000 <sup>b</sup> | 97.8%     |
| Useable? <sup>a</sup>                    | 0                | N/A              | Empty     | 0                | N/A                | Empty     |
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a. Insufficient pairs of ratings for accurate validity or reliability

b. Insufficient item variability across parks to use kappa

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# Results



- Just over a quarter of eCPAT items demonstrated poor validity and reliability with youth
- Items that had lower kappa or percent agreement scores tended to be more subjective, temporal, or abstract in nature
  - Does playground have separation from the road?
  - Are there lack of eyes on the street?
- Small modifications to definitions/wording suggested
- Standardized examples to improve rating of condition

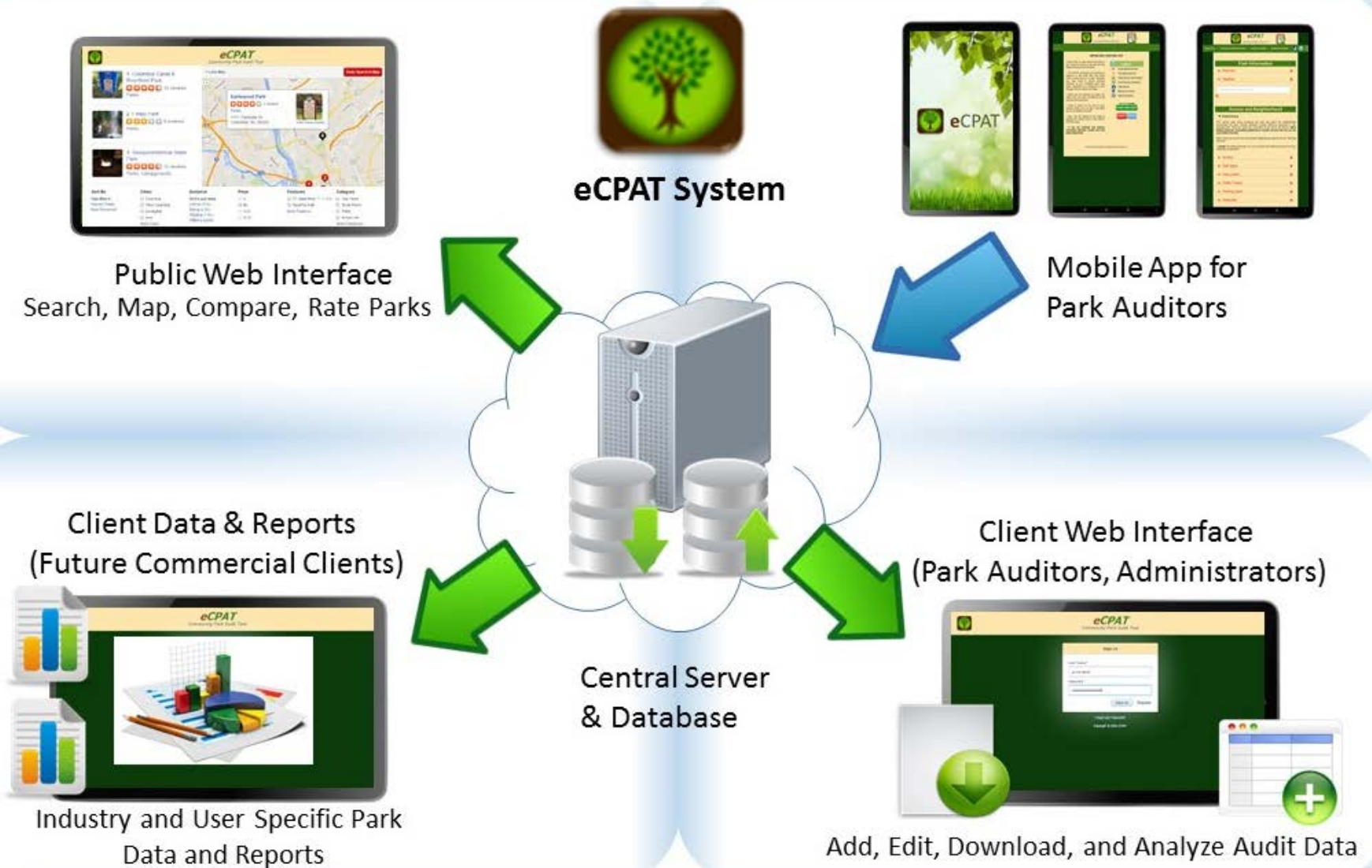
# Implications



- Valid and reliable tool
- Innovative combination of technologies
- Empowerment & advocacy for park PSE change
- Healthier communities and environmental justice
- Population level obesity reduction



# eCPAT System



# Future Research



- **eCPAT PSE advocacy intervention**
  - Integrate with youth group community action planning activities
  - Work with youth to advocate for and create healthy park PSE changes
- **Park Prescriptions intervention**
  - Development of eCPAT and technology infrastructure at municipal level
  - Collaboration with local hospital systems
- **Standardization of national park data**
  - National Recreation and Park Association

# eCPAT App Demo





# Acknowledgements



- Dr. Benjamin Schooley, Paul Diehl, Mark Parrott
- Greenville County and City of Greenville Parks and Recreation Departments
- LiveWell Greenville
- South Carolina Clinical and Translational Institute
- University of South Carolina
- University of Missouri
- National Recreation and Park Association

# Contact

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eCPAT Website:

<http://beachlab.sc.edu/current-research/ecpat/>



# Development and testing of mobile technology for community park improvements: Validity and reliability of the eCPAT application with youth



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