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The Application of Count Regression Models to Improve an Extension Program

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## Abstract

The problems associated with obesity and sedentary lifestyles with are being addressed by Extension. Using data from Walk Georgia, two regression analyses were conducted for the purpose of improving this online, exercise-promotion program. Among other things, the findings say that counties with less broadband availability have a serious disadvantage in recruiting participants.

## 1. It's no secret: we are fat.

- 29.6% of Georgia's population is obese (CDC, 2008)
- 23.4% had no leisure time activity (Ga. HHS, 2008)
- Strong evidence that more active adults have:
  - lower mortality rates
  - develop less:
    - cardiovascular disease
    - type 2 diabetes
    - colon and breast cancer

## 2. Response by Georgia Extension

- WalkGeorgia.org begun in 2008
- Design work by faculty in FACS
- Run twice/year, 8 week programs
- Average participation is 2,500
- About 6,100 subscribers to newsletter emails
- Recruitment is up to county faculty, usually FACS
- Participants track their exercise on this website ↓

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WELCOME TO WALK GEORGIA!

The goals of this program, which is sponsored by the University of Georgia Cooperative Extension and its partners, are to help you:

- Develop regular physical activity habits
- Get healthier and more physically fit
- Have fun!

How does Walk Georgia work?

As you log your minutes of physical activity each week, you will virtually travel across the state of Georgia discovering interesting facts about each county you "visit" and learning new ways to improve your health. We hope you will be inspired to join us and others in your county as we get more active and become healthier!

See About Walk Georgia for more in-depth information.

Do you need help using Walk Georgia?

Check out our comprehensive help section on our site.

## 3. Program Delivery

- Participants register for the program and supply basic demographic data.
- They revisit the site and enter the type and duration of their exercise.
- 57 types of exercise can be entered, and the software converts each type into a walking mileage equivalent.
- For each 5 miles "walked," the participant moves across an on-screen map of Georgia, from county to county.
- A goal for clients is to "visit" each of the 159 counties, or to walk 795 miles.

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WELCOME, WARREN KRIESEL!

You have earned 29.4 miles. You have visited 9 counties. Only 6.0 miles to go before you can choose again!

Record your physical activity

Use the form below to enter your physical activity and minutes for this week. You can also edit activity on your [My Map](#) page.

Week of: 3/18/12 - 3/24/12

Day Physical Activity Minutes Mileage

Sun 0.0 0.0

Program Rankings

\*Note: data in this section is updated every 20 minutes.

Top Individuals in Oconee

Name	Mileage	County
Bo R.	342.0	Oconee
Caroline L.	308.8	Oconee
Beth L.	282.7	Oconee
Shelle K.	256.0	Oconee
Cathy M.	238.7	Oconee

• # active participants: 45  
 • Total/Avg mileage: 4,801/107  
 • Avg % of 12-week goal: 59%

Top Teams in Oconee

Name	Mileage	County
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## 4. How can the stored data be used to improve the Program?

Two questions are addressed:

- What are the characteristics of clients who under utilize the program?
- What explains the relative success of some county offices in enrolling more clients?

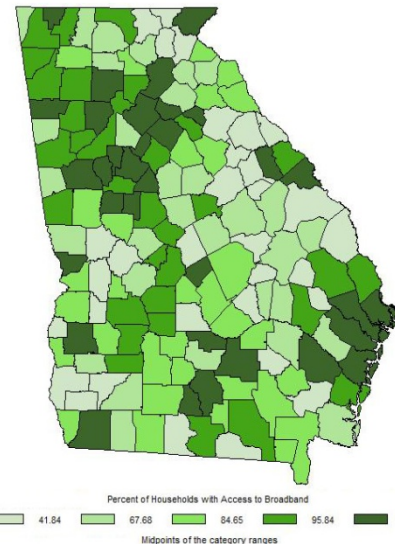
Both questions use count-type data, so Poisson regressions are used

## 5. Model A: Y = # recruits, n=158 Extension Offices

Parameter	Summary Statistics		Zero-Inflated Poisson Distribution	
	Mean	Std Dev	Estimate	t Value
Intercept	n.a.	n.a.	-1.569	-9.76*
Broadband availability, % households	78.44	22.15	0.02746	17.42*
Number of Staff	3.658	1.846	n.a.	n.a.
Female staff ratio	60.25	19.59	0.0297	23.4*
Special Program	0.037	0.192	1.03389	20.13*
lintercept	n.a.	n.a.	0.42872	0.59
Istaff	3.658	1.846	0.6177	2.64*

For improving the program:

- Number of staff very important, but Dean has little control
- Female staff are important, but ditto
- Special programs should be encouraged, esp. wellness partnerships with small local companies in context of business expansion and retention.
- Broadband availability is important – concentrate efforts into well-served areas? ↓



Walk Georgia News: Week 6  
 March 21, 2012

## Preventing Obesity in Kids

At one time, an overweight child was a rare sight. Now about one-third of American youngsters are too heavy. Controlling weight problems in younger children is the responsibility of parents, grandparents, teachers, coaches and other adults in their lives.

Forward to a Friend

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Announcements

Greg Bowman, right, Gordon County Extension Coordinator, recently presented Century Sebastian at Facebook around 10:30.

## 6. Model B: Y = # days participation, n=1,016 participants

Parameter	Summary Statistics		Negative Binary Distribution	
	Mean	Std Dv	Estimate	t Value
Intercept	n.a.	n.a.	2.089	10.05*
Age	43.584	12.307	0.013	6.51*
Education	15.423	2.618	-0.001	-0.05
Fulltime	0.774	0.418	0.036	0.66
Nonwhite	0.171	0.377	0.123	2.08*
Female	0.802	0.398	-0.137	-2.53*
Dependents	0.669	1.029	-0.028	-1.15
Income, \$1k	65.478	29.363	0.001	1.23
Single	0.282	0.450	-0.051	-0.85
Team	0.416	0.493	0.306	6.6*
Pastmonth	0.907	0.289	0.352	4.08*
Alpha	n.a.	n.a.	13.795	18.93*

For improving the program, focus on groups that are under-performing:

- Young people
- White women
- Strongly encourage team formation (program incentives)
- People already exercising perform more, so try to recruit them as team leaders.