



A Community-Based Intervention to Increase Energy Saving Behaviors Among Children & Families



Thomas Robinson, MD, MPH (Pediatrics, SPRC)

Health behavior change, community-based intervention trials

Nicole Ardoin, PhD (Education, Woods)

Environmental education, motivations for environmental behaviors, sense of place & geographic scale

Hilary Schaffer Boudet, PhD (E-IPER)

Social movements, environmental planning

K. Carrie Armel, PhD (PEEC)

Cognitive neuroscience, behavior change

June Flora, PhD (H-STAR)

Communication, social marketing

K. Farish Haydel & Michelle Fujimoto (database managers)

Susan Bryson, MS (statistical analyst)

Research Assistants: Carrie Adams, Lindsay Battenberg, Laura Bryson, Sonia Carlson, Marra deGraff, Maria DeGuzman, Molly Gibson, Nicole Greenspan, Karee Juvette, Shana Karp, Kathayoon Khalil, Lauren Kubiak, Angela Kwok, Gina Lappe, Sonia Mendoza, Lindsay McCarthy, Heather McTaggart, Kathleen O'Connor, Stefanie Tanenhaus, Jade Wang, Jessica Whalen

A Community-Based Intervention to Increase Energy Saving Behaviors Among Children & Families

Purpose: To apply behavioral theories and methods used in public health promotion to change energy-related behaviors.

Specific Aims:

1. To increase children's energy-saving behaviors
2. To reduce family/household energy use

Target Group: Upper elementary school-aged children and their families



GIRLSOUTSUSA
NORTHERN CALIFORNIA

JUNIOR AIDE

GLEE Study Design

- Cluster Randomized Controlled Trial
 - Troop as unit of randomization & analysis
- 30 Junior (age 9-11) troops (N=331 girls/families)
- Interventions consisting of 5 “lessons” during troop meetings plus home/community activities over ~3 months
 - 15 troops: home energy use
 - 15 troops: food and transportation energy use
- Baseline and post-test questionnaires, 3-6 month follow-up
 - Parent and child
- Household electricity and gas usage

GLEE Implementation

- Curriculum based on principles from social cognitive theory

Curriculum	Goal Setting	Monitoring	Skills Training	Problem Solving	Modeling
Home Energy	Pledging	Action Jar	Vampire energy + Energy relay	Role play skits	Newscast
Food and Transport	Pledging	Action Jar	The origins game + tire pressure	Role play skits	Newscast + Letter to the president

- Attendance high in both treatments
 - Home energy = 4.48 out of 5 sessions
 - Food & transport = 4.49 out of 5 sessions
- Video evidence of consistent implementation across troops
- 24 of 30 troops had consistent instructor across all sessions

Parent Intervention

<http://glee.stanford.edu>



glee news for

Parents

GLEE Parent Newsletter Issue One

IN THIS ISSUE

- Welcome to GLEE
- Target Actions
- Session Overview
- Session Schedule
- Supporting Your Girl Scout

WELCOME TO GLEE

Welcome to GLEE (Girls Learning Environment and Energy)! We're so excited that you and your Girl Scout are participating in our program. For five troop meetings, your Girl Scout will learn how to save energy and protect the environment.

CHOICES MATTER

The ways we use energy have huge impacts on the planet and our families. Most of the energy we use in the United States comes from non-renewable sources, which means that someday we will run out of our most important resources, such as coal. And burning coal and other traditional energy sources generates gases and other pollutants that dirty our air and water and also contribute to climate change. Cutting back on our energy use can go a long way toward solving some of the world's biggest environmental challenges.

Cutting energy use also pays off for families. The average American family spends almost \$2,000 every year on energy bills. Reducing energy use around the home means families can spend less on energy bills and more on other priorities.

DID YOU KNOW?

Almost all of the energy we use in the United States—92 percent—comes from non-renewable sources such as coal and petroleum.

Source: energysavers.gov



TARGET ACTIONS

Through this program, your Girl Scout will learn about things she can do at home to save energy, both alone and with your help. Some of the actions we'll discuss include:

- Turning off lights, televisions, and computers when not in use
- Plugging electronics into a power strip and switching power strips off at night
- Changing standard incandescent light bulbs to more efficient CFLs or LEDs
- Washing clothes in cold water and hang drying the laundry
- Adjusting the temperature settings on the refrigerator, water heater, and heating-and-cooling (HVAC) system

By improving energy efficiency, your Girl Scout can conserve natural resources and help your family save money on electricity and gas bills.

GLEE SESSIONS

Each session will include hands-on activities to help girls fit these actions into their daily lives. The activities include an action jar (which will allow Girl Scouts to monitor their progress), pledges to set goals for the following session, a self-made newscast about what they've learned, and a game or activity. We encourage you to become involved, too. For example, you can ask your daughter about each week's GLEE activities and support her as she accomplishes her weekly pledge.

GLEE.STANFORD.EDU



glee news for

Parents

GLEE Parent Newsletter Issue One

IN THIS ISSUE

- Welcome to GLEE
- Target Actions
- Session Overview
- Session Schedule
- Supporting Your Girl Scout

WELCOME TO GLEE

Welcome to GLEE (Girls Learning Environment and Energy)! We're so excited that you and your Girl Scout are participating in our program. For five troop meetings, your Girl Scout will learn how to save energy and protect the environment through choices related to food and transportation.

CHOICES MATTER

Many people are surprised to learn how big an impact our choices about what we eat and how we get around have on the environment. Power plants and home energy use get lots of attention, but food and transportation are two of the largest contributors to America's energy use and environmental damage. It has been estimated that more than one-third of all fossil fuels produced in the US are used in agriculture. The livestock sector alone accounts for nearly one-fifth of global greenhouse gas emissions.

Transportation choices are vitally important, too. In the US, 67 percent of the oil we use is for transportation.

Making a few targeted changes in the ways we eat and move can have huge benefits for the planet.

DID YOU KNOW?

Over 600 gallons of water are needed to produce a single hamburger (most of it to grow the grain to feed the cow).



Source: Stuff—The Secret Lives of Everyday Things, by John C. Ryan and Alan Thorn Durning

TARGET ACTIONS

Through this program, your Girl Scout will learn about how to make more environmentally friendly choices, both alone and with your help. Some of the actions we'll discuss include:

- Increasing the amount of walking, biking, or carpooling your Girl Scout does
- Checking and adjusting the tire pressure on cars
- Eating less meat (specifically beef) and eating more locally grown fruits and vegetables
- Eating less packaged snack food
- Using reusable water bottles

Using less energy will not only help the environment by conserving our natural resources, but it will also help your child stay healthy through better nutrition and more physical activity.

GLEE SESSIONS

Each session will include hands-on activities to help girls fit these actions into their daily lives. The activities include an action jar (which will allow Girl Scouts to monitor their progress), pledges to set goals for the following session, a self-made newscast about what they've learned, and a game or activity. We encourage you to become involved, too. For example, you can ask your daughter about each week's GLEE activities and support her as she accomplishes her weekly pledge.

GLEE.STANFORD.EDU

GLEE Follow-up

- 3 to 6 months after completion of program
- Girl Scouts & parents
- Activities
 - Thank you video
 - Girl Scout & parent surveys
 - Energy data collection
 - Troop Video
- Challenges of collecting energy data

Girl Scout and Parent Participation



	Recruitment	Baseline	Post	Follow-up (ongoing)
Total	30 troops 331 Girl Scouts	30 troops 321 Girl Scouts 288 Parents	30 troops 309 Girl Scouts 276 Parents	21 troops (N=224) 188 Girl Scouts 185 Parents 90 Energy data
Home Energy	15 troops 158 Girl Scouts	15 troops 152 Girl Scouts 136 Parents	15 troops 151 Girl Scouts 133 Parents	11 Troops (N=107) 84 Girl Scouts 86 Parents 45 Energy data
Food & Transport	15 troops 173 Girl Scouts	15 troops 169 Girl Scouts 152 Parents	15 troops 158 Girl Scouts 143 Parents	10 Troops (N=117) 101 Girl Scouts 99 Parents 45 Energy data

† Current rate of survey completion

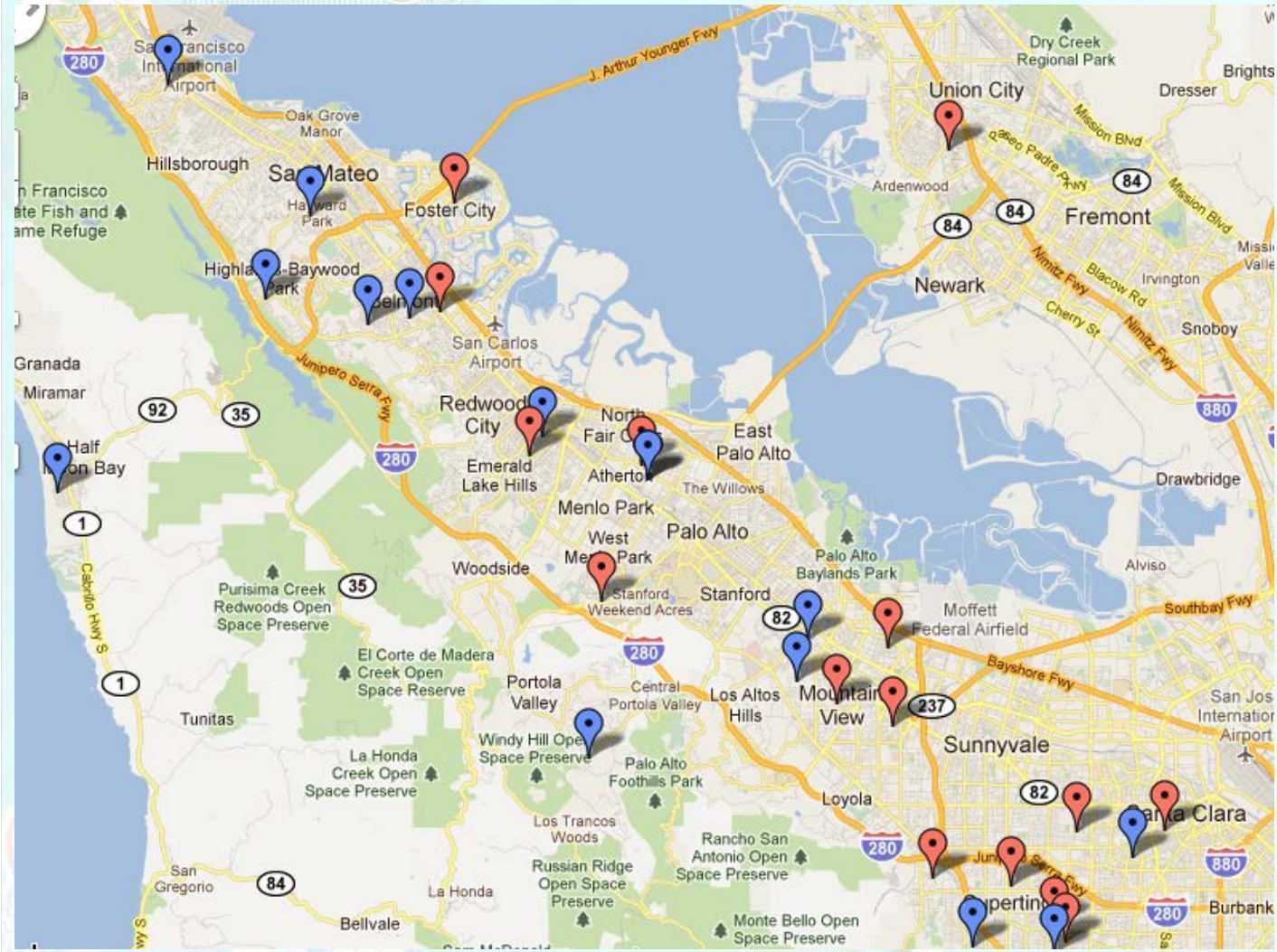


GLEE Demographics

- 90% married
- 63% have parent with graduate degree
- 53% have household income above \$160K/yr
- 49% white, 30% Asian, 15% multiracial



GLEE Locations

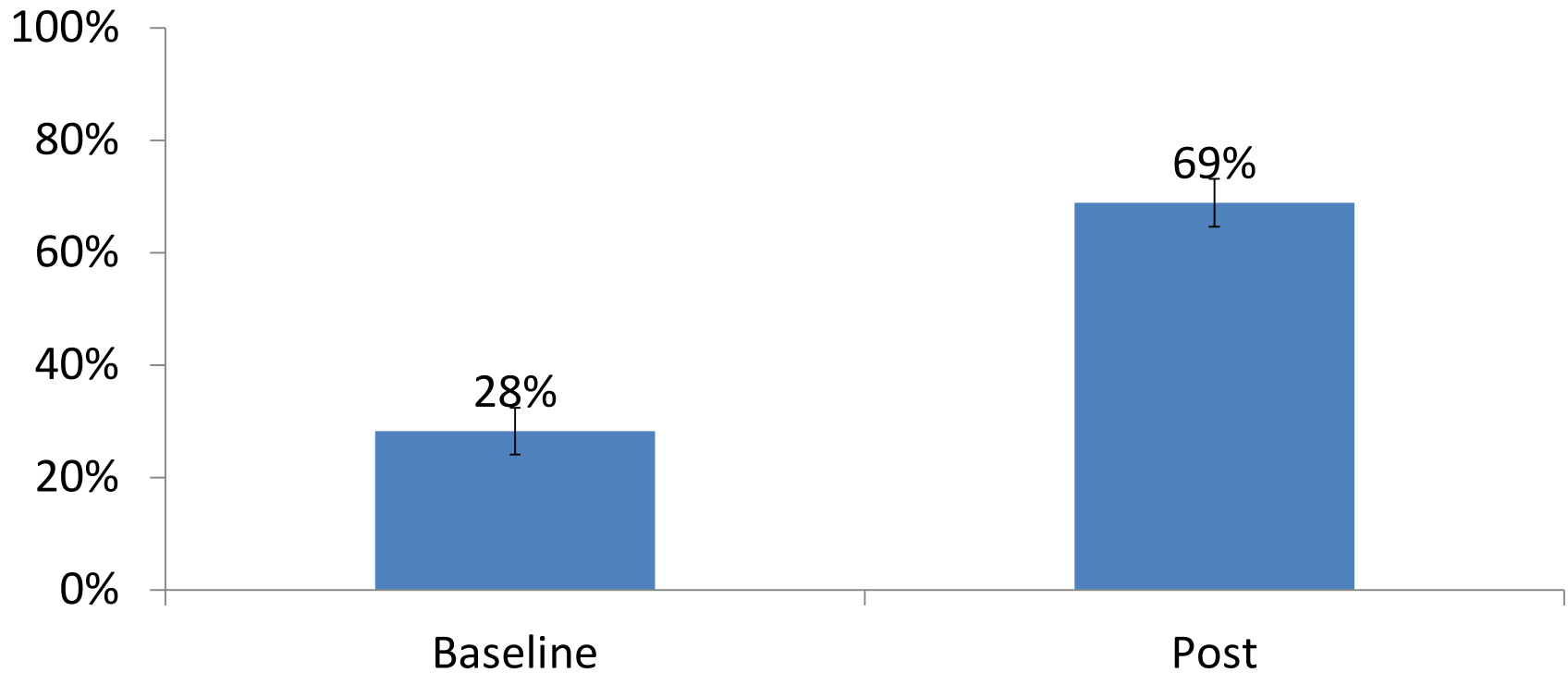


-  Home
-  Food & Transport

JUNIO

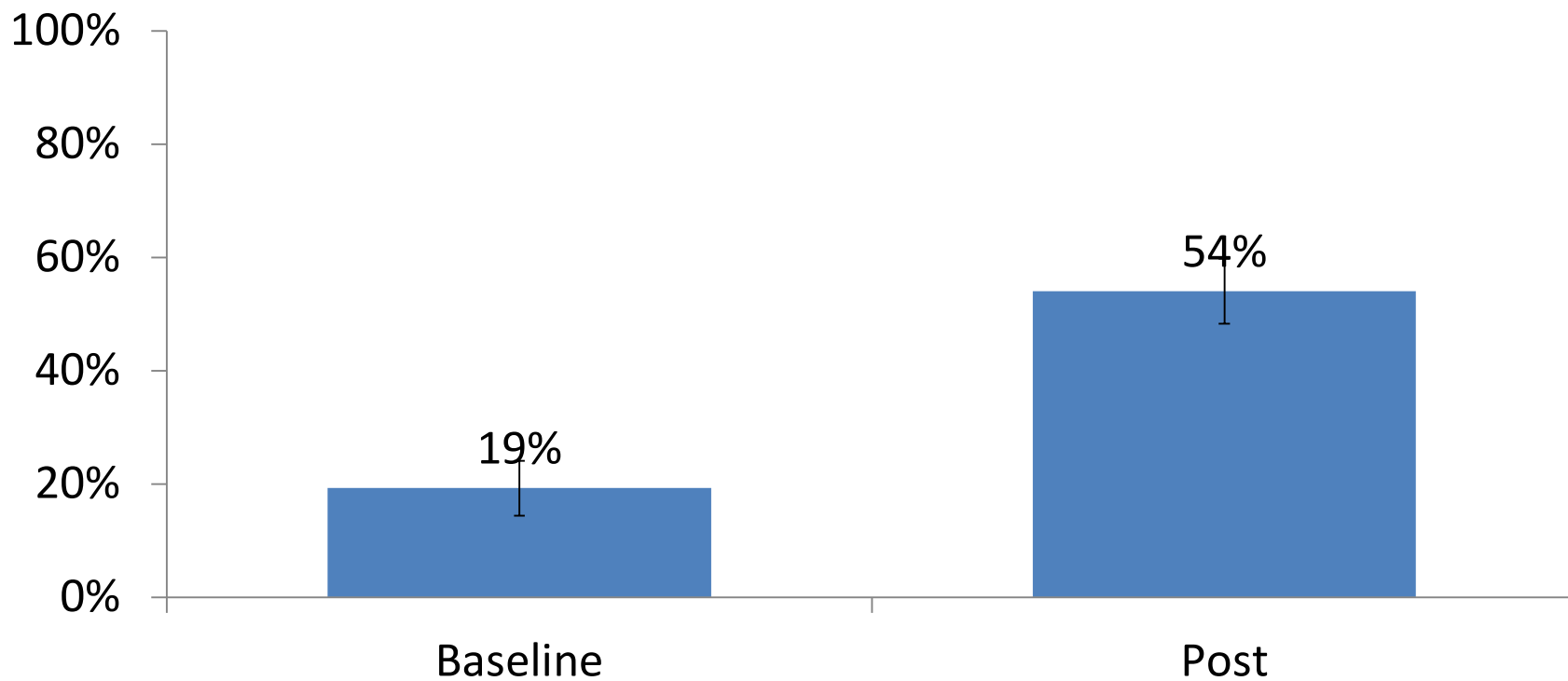
Results: Girl Home Energy

Percent correct answers to home energy knowledge questions



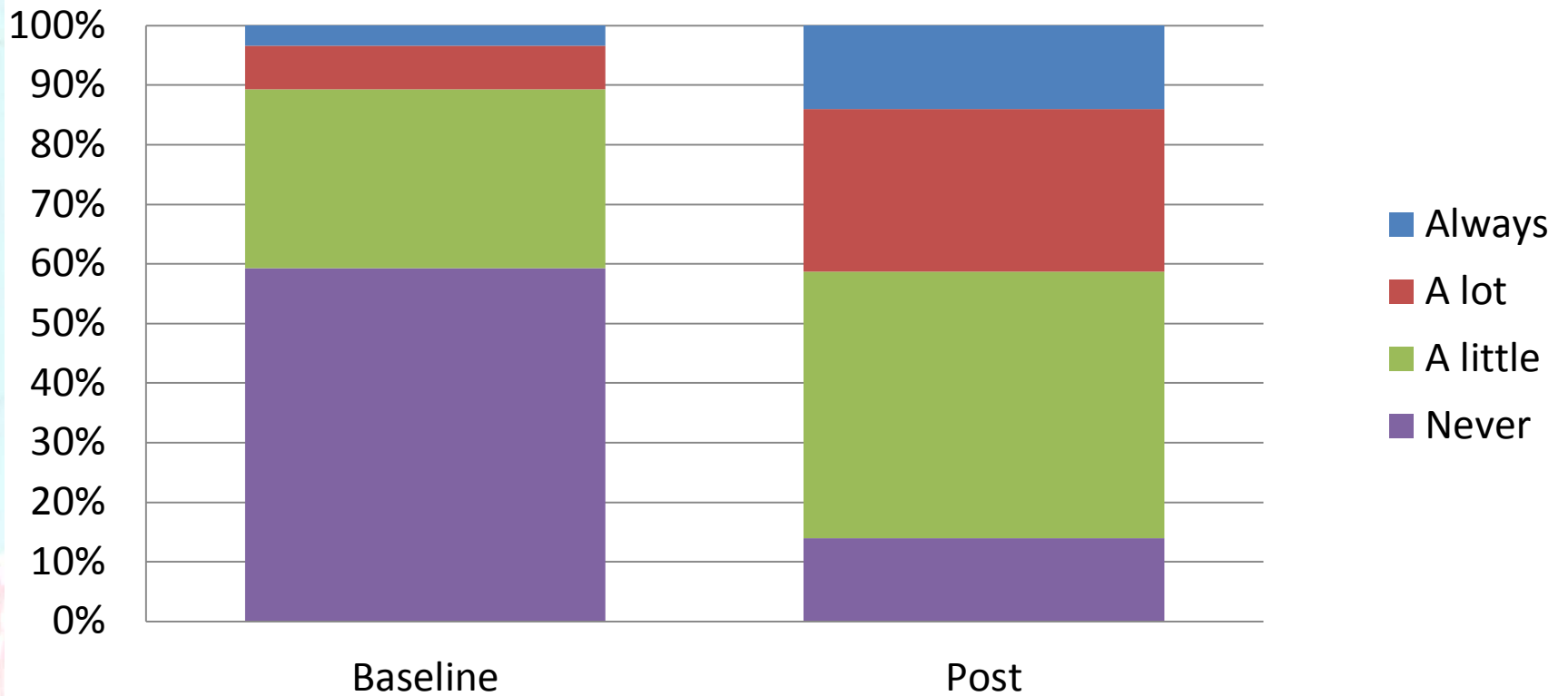
Results: Girl Home Energy

Plugging electronics into a power strip



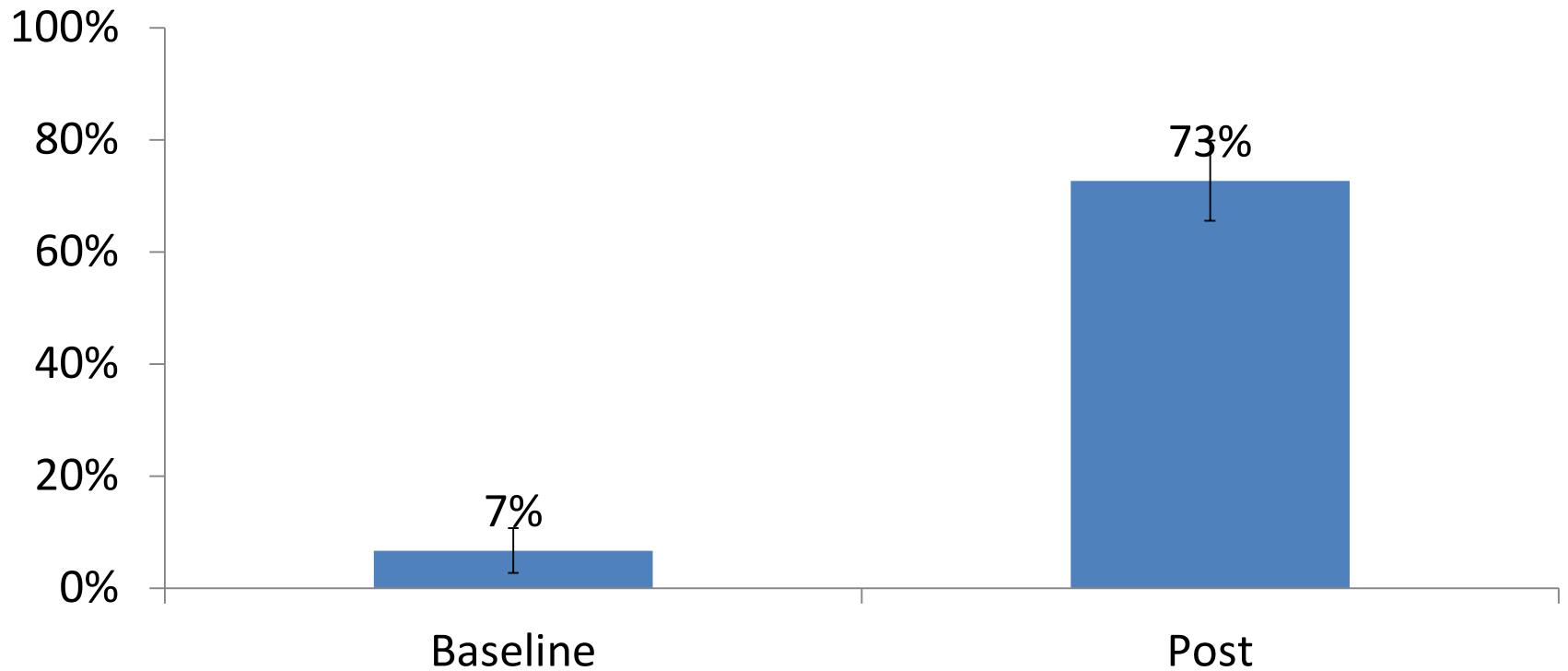
Results: Girl Home Energy

Unplugging TV, DVD and turning off power strips at night



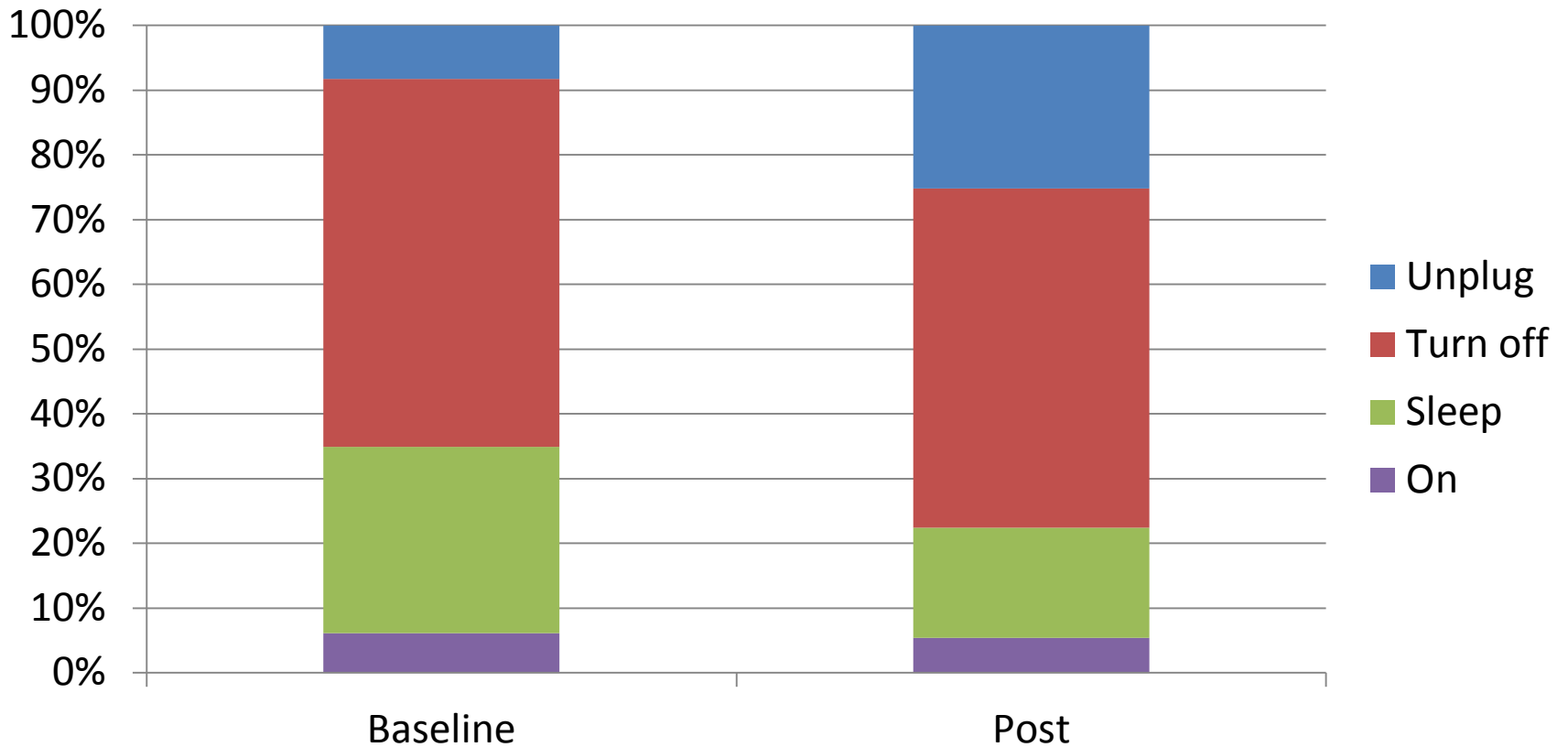
Results: Girl Home Energy

Percent with reminder stickers posted at home



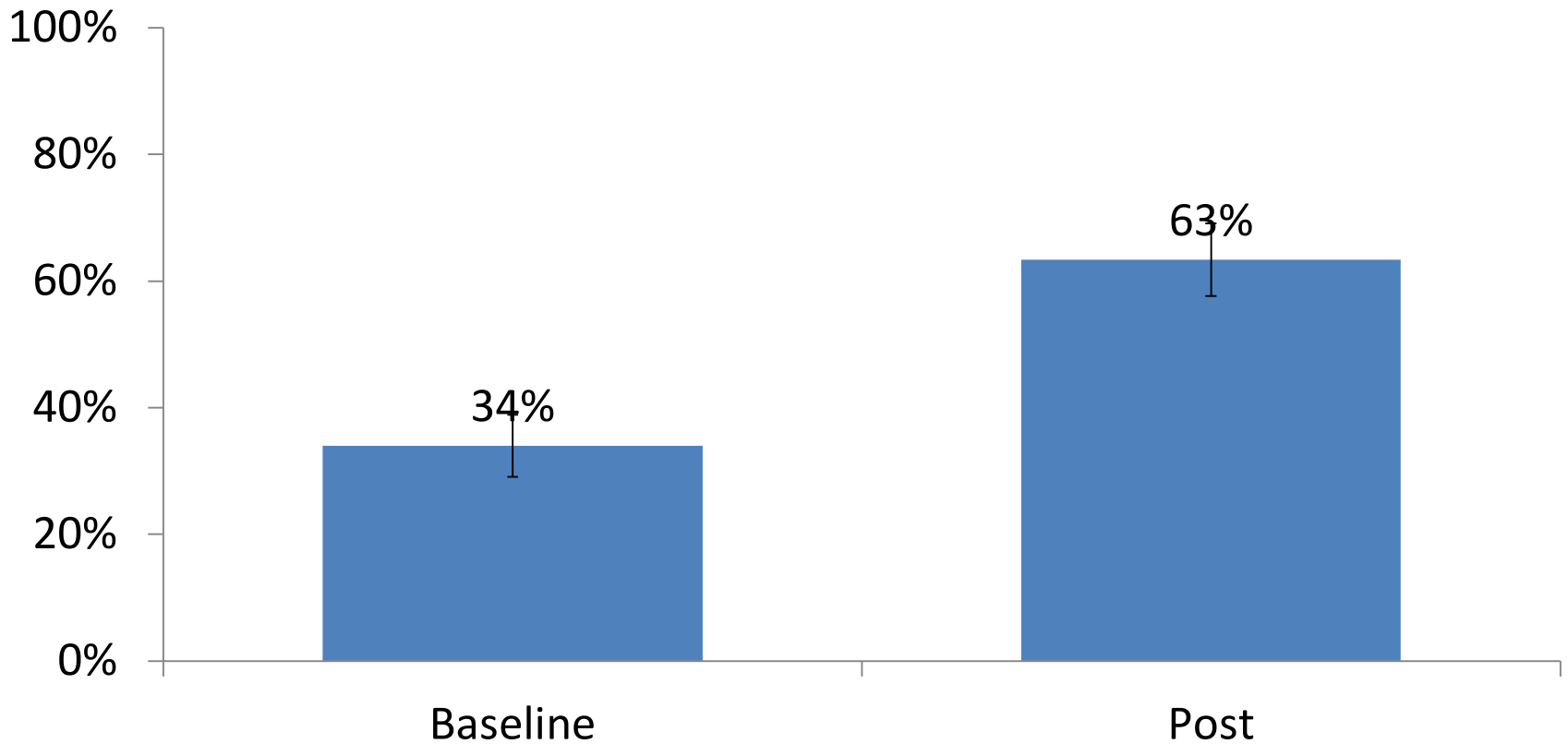
Results: Girl Home Energy

Computer behavior when done using it



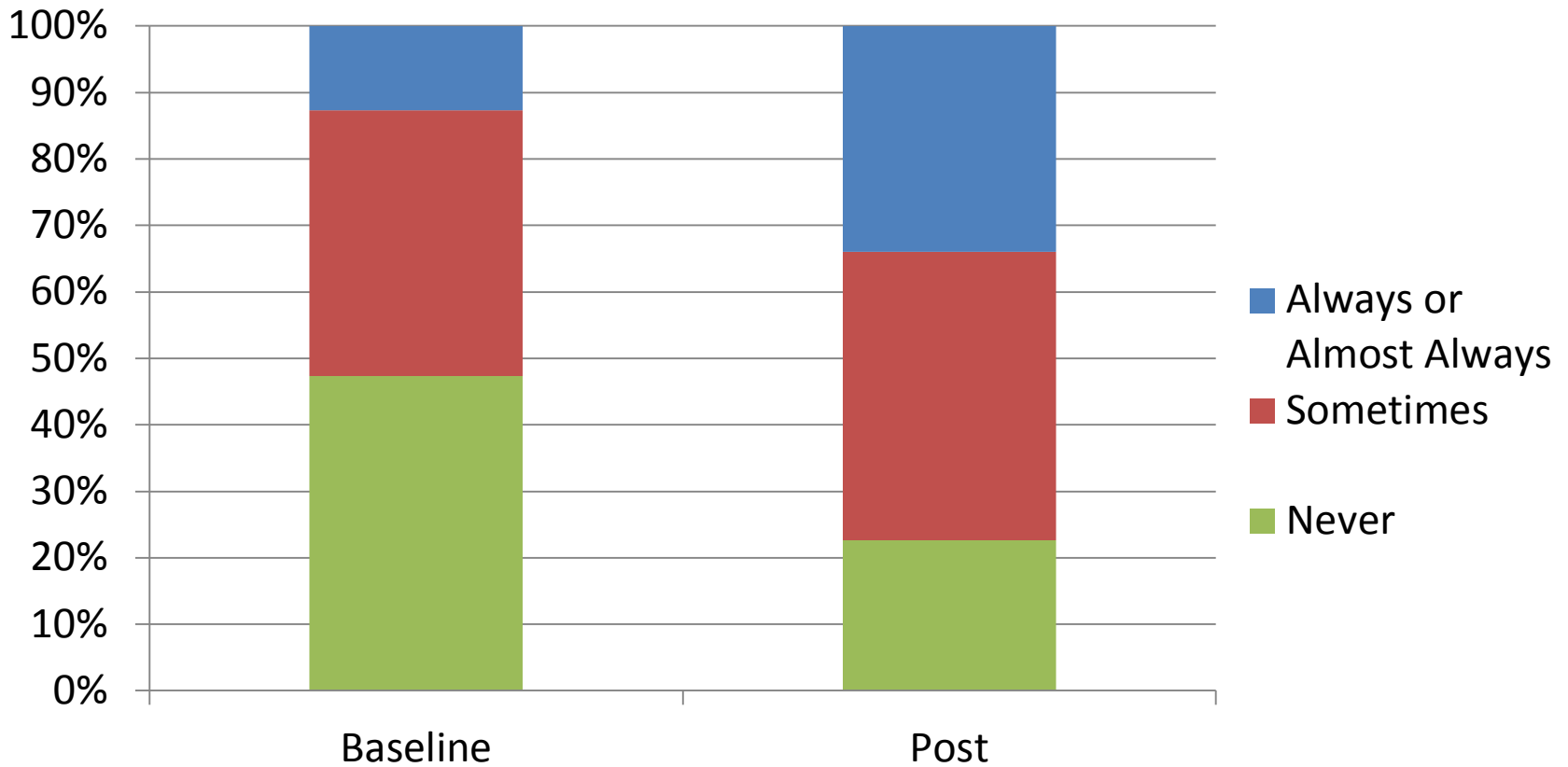
Results: Girl Home Energy

Percent who air dry dishes in dishwasher



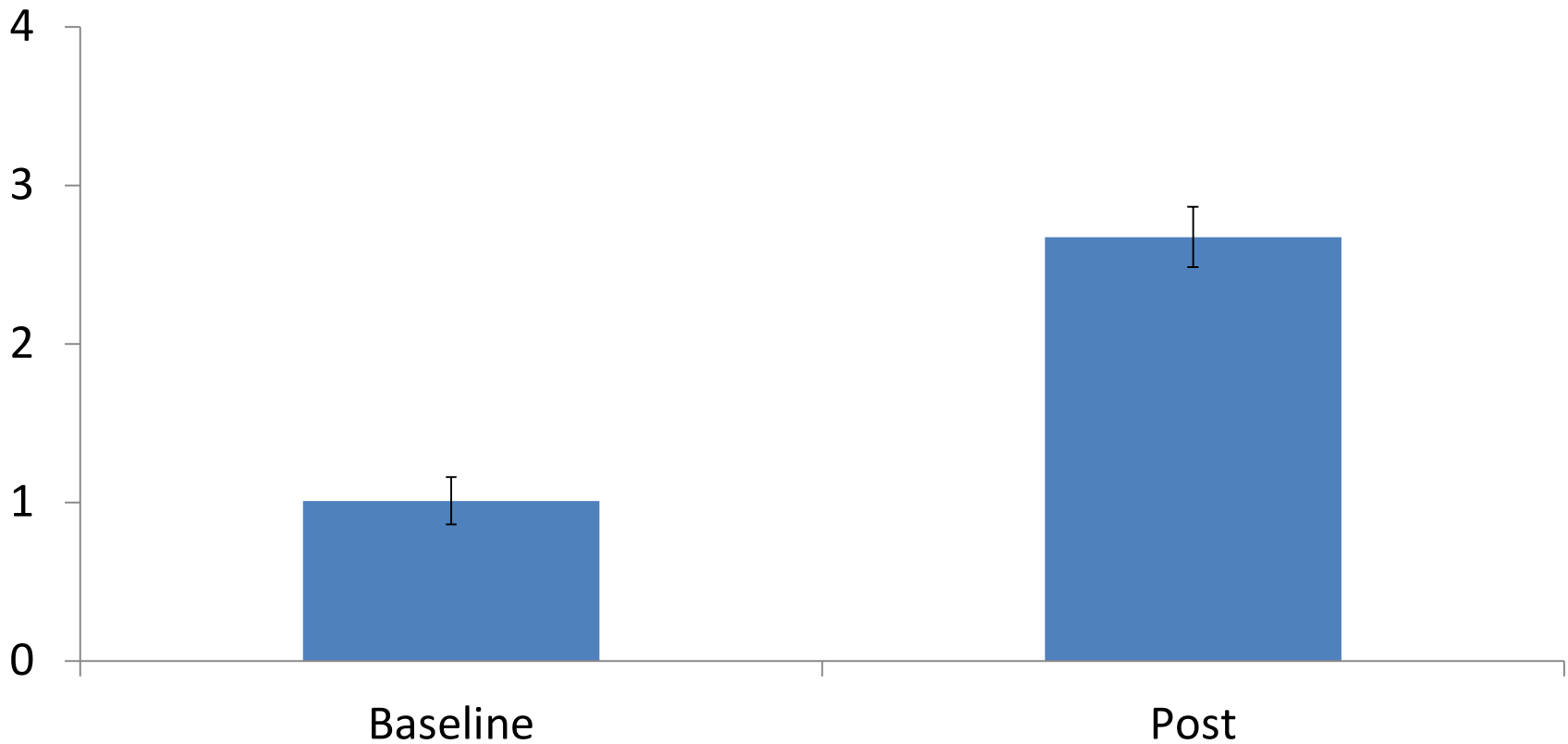
Results: Girl Home Energy

Frequency of hang drying clothes



Results: Girl Home Energy

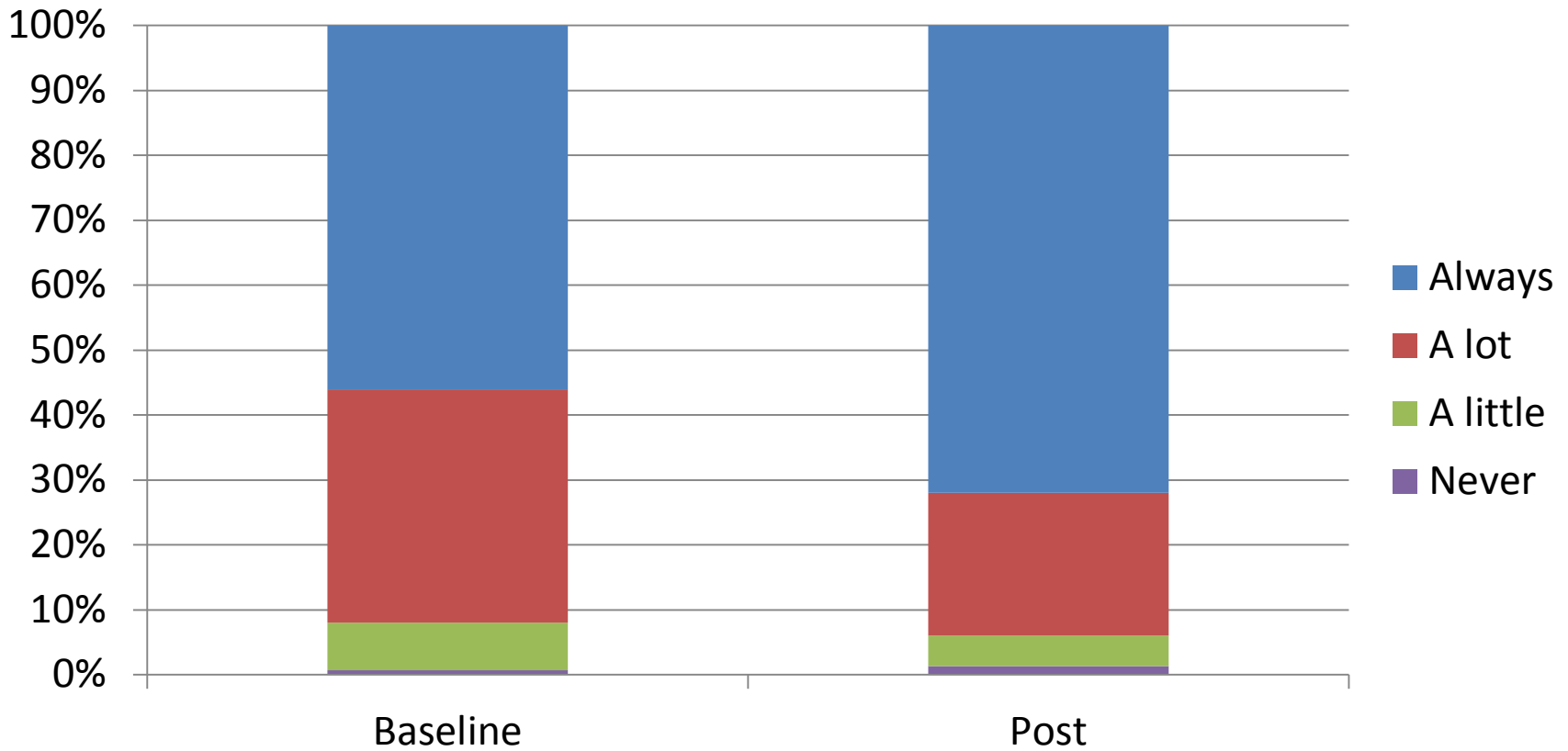
Index of parent controlled home energy behaviors*



*Installing CFL, adjusting fridge and hot water heater temperatures, cold water wash

Results: Girl Home Energy

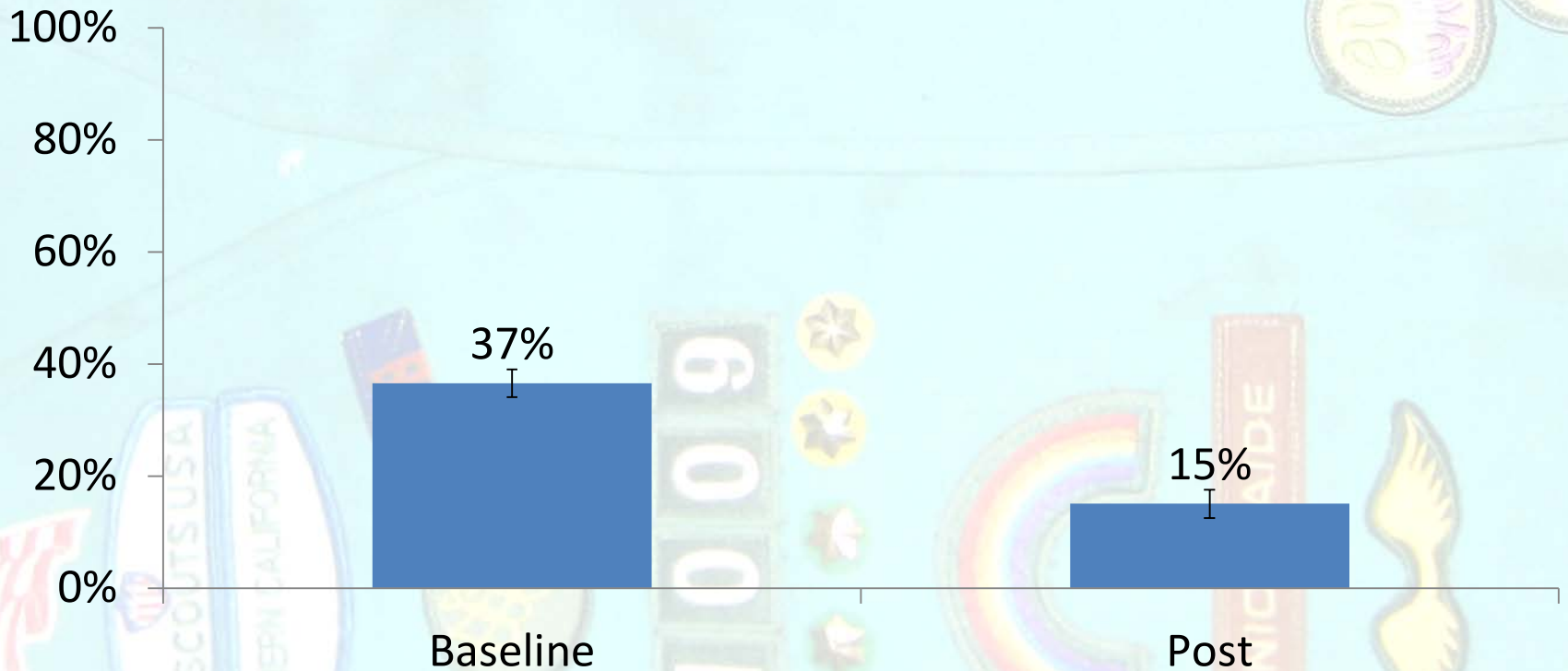
Index of child friendly behaviors*



*Turning off TV, DVD player, lights, unplugging chargers

Results: Girl Home Energy

Percent “don’t know” answers to home energy behavior questions

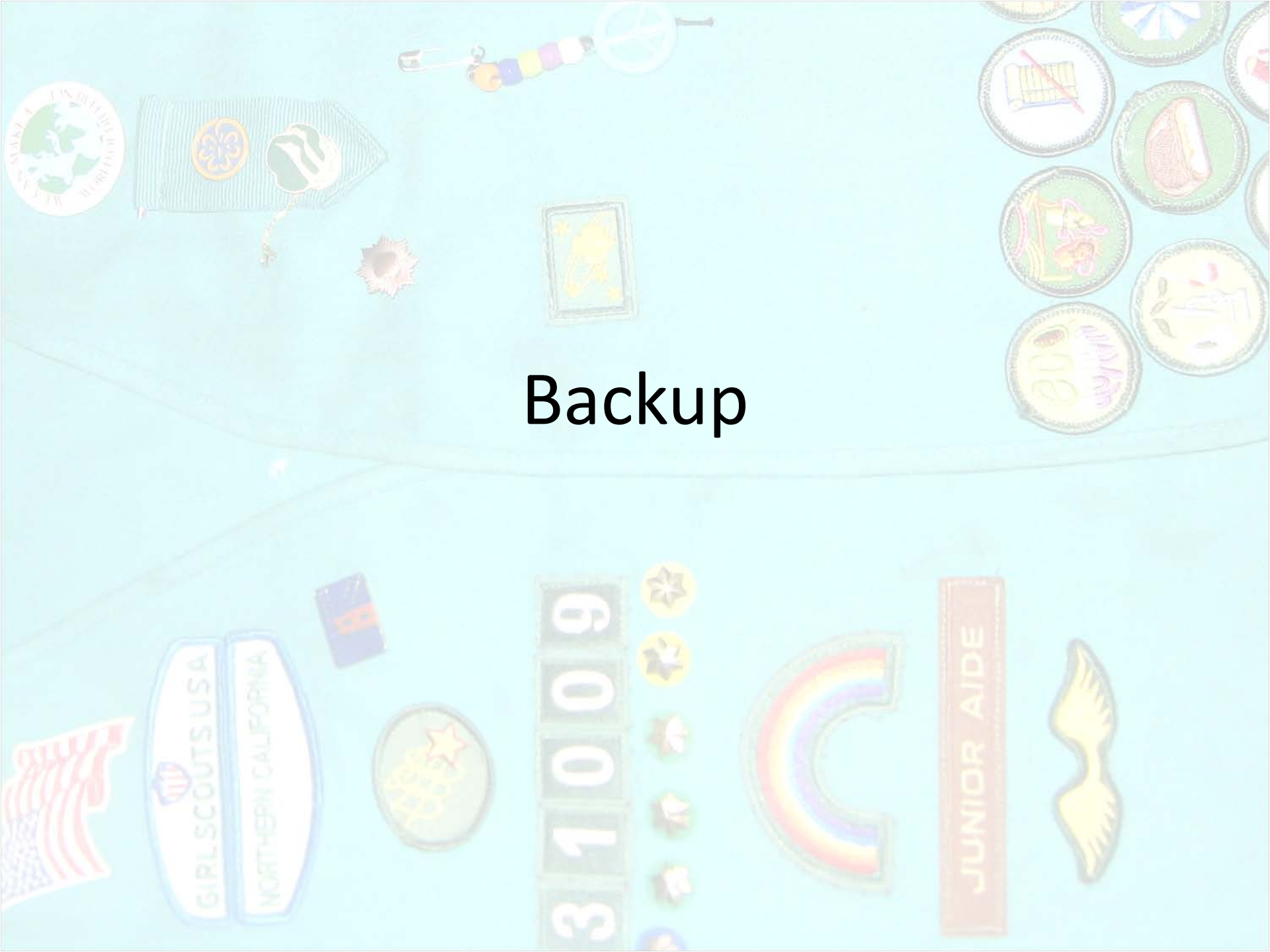


Next steps

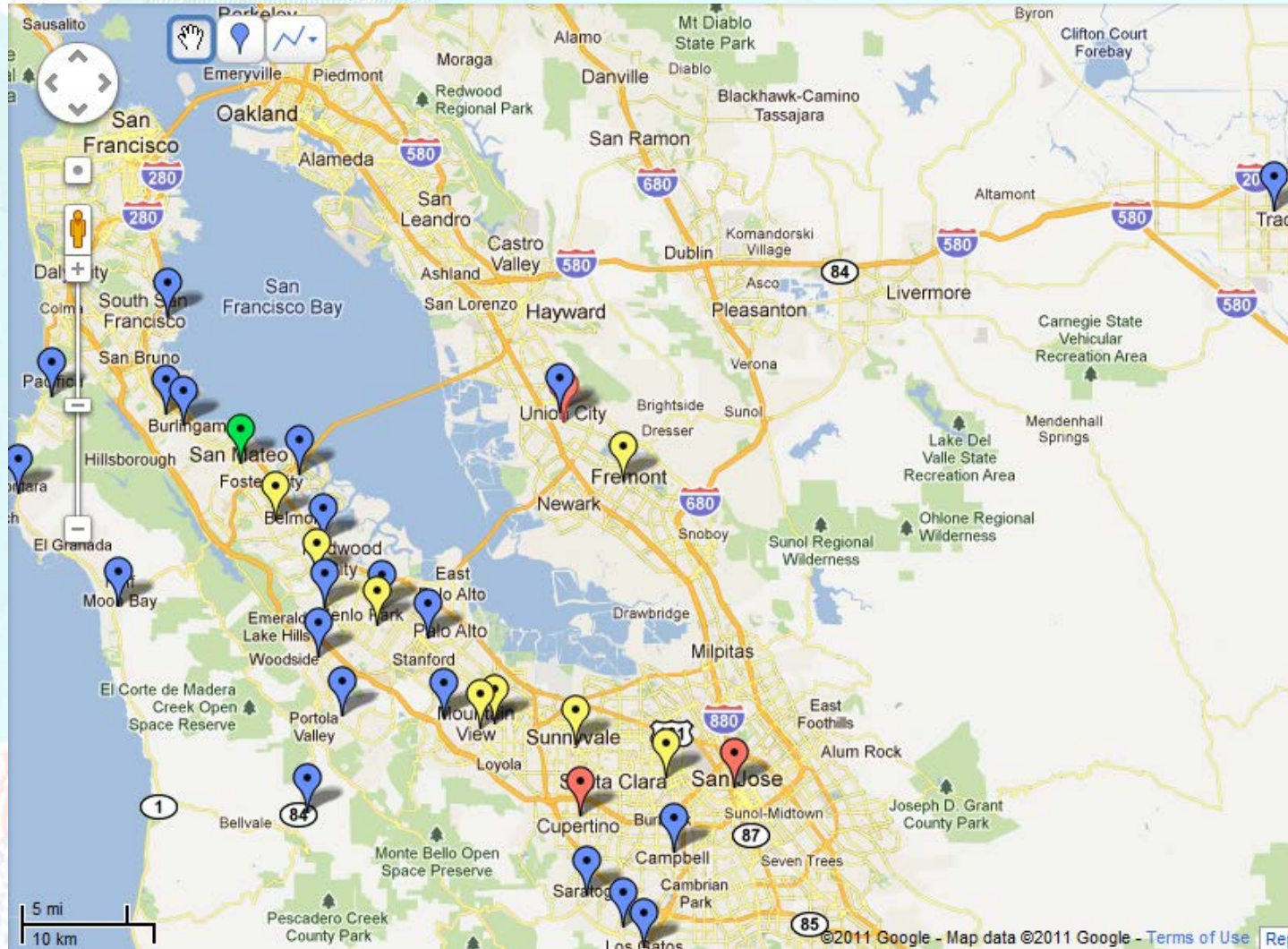
- Complete 3- to 6-month follow-ups
- Collect household electricity and gas data
- Complete database creation
- Analyze data and write-up
- Disseminate findings
- Package and disseminate curricula



Backup

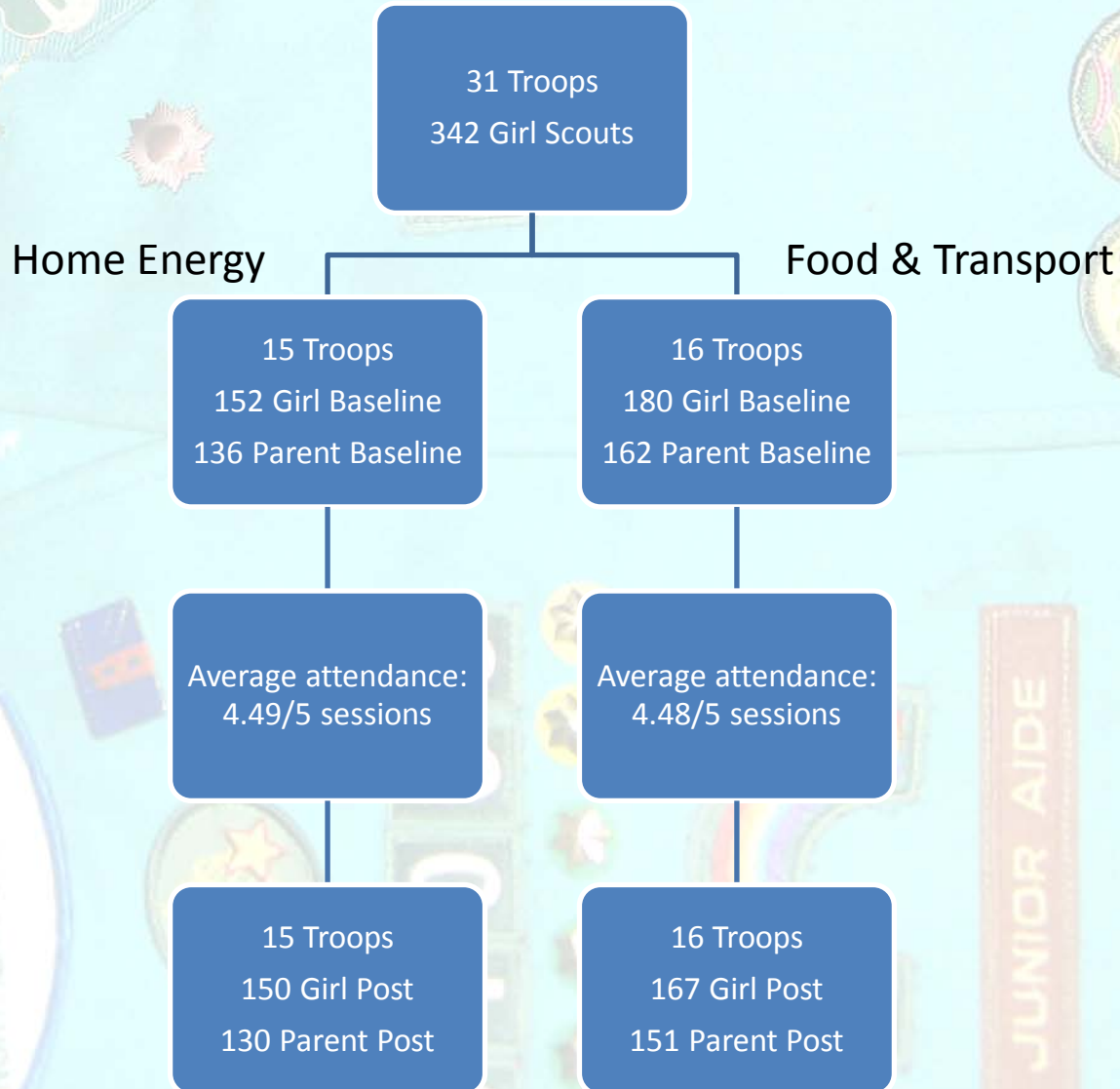


GLEE Participant Locations



- 1-10 girls
- 11-20 girls
- 21-30 girls
- 31+ girls

Data Collection



Study population demographics

Household Demographics	
Marital status	
Married	90%
Not married	10%
Parent education	
Did not finish High School	1%
High School Graduate or GED	4%
College Graduate	32%
Masters Degree	39%
Doctoral Degree	24%
Income	
less than \$40,000	3%
\$40,000-\$79,999	6%
\$80,000-\$119,999	16%
\$120,000-\$159,999	22%
\$160,000-\$199,999	18%
\$200,000 or more	35%
Average parent age	44
Average household size	4.3

Girl Scout Demographics	
Ethnicity	
Asian	30%
Native Hawaiian or Other Pacific Islander	.3%
Hispanic, Latino or Spanish origin	4%
White	49%
Multiracial	15%
Other	1%
Grade	
2 nd	.3%
3 rd	6%
4 th	58%
5 th	34%
6 th	1%
7 th	1%
Average age	9.6

Target behaviors


Home energy use:

- Use CFLs / LEDs
- Turn off lights, computers, TVs when not in use
- Use & turn-off power strips
- Air dry dishes
- Wash clothes in cold water
- Hang dry clothes
- Adjust fridge temperature
- Adjust HVAC turn down/up temperature
- Turn down water heater temperature
- Adjust pool pump cycling rate, heating time
- Request home energy audit
- Request TED device
- Educate family members and neighbors

Food / transport energy use:

- Eat less meat
- Eat less packaged/processed food (snacks, fast food)
- Drink tap water (instead of bottled and/or sweetened drinks)
- Use reusable water bottle
- Walk, bike, mass transit, carpool to/from school
- Walk, bike, mass transit, carpool to/from troop meetings
- Adjust tire pressure
- Shop at farmer's market / CSA box
- Educate family members and neighbors

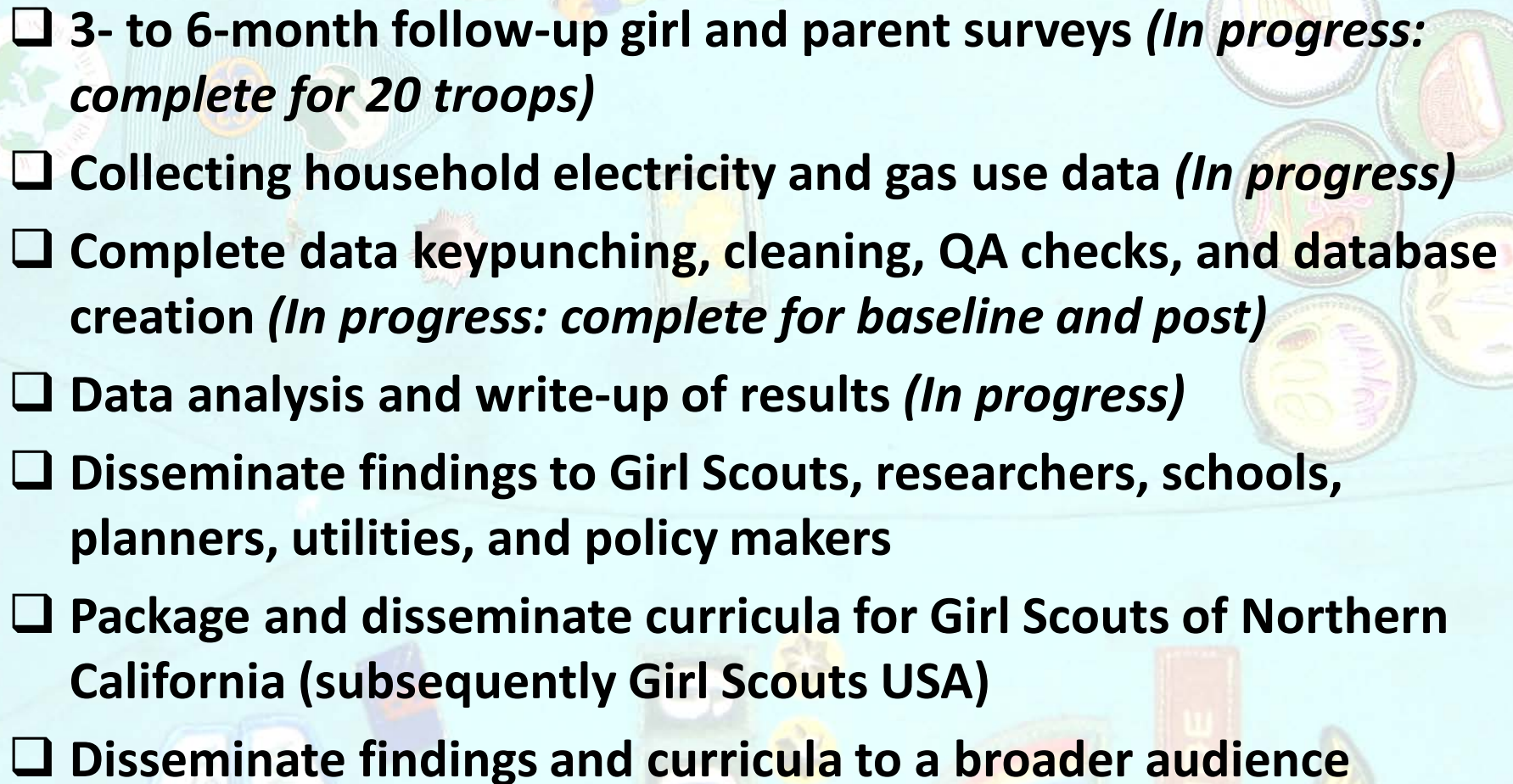


- 
- ✓ Formed research team
 - ✓ Reviewed theory and extant literature
 - ✓ Identified target population (Girls Scouts Juniors)
 - ✓ Signed MOU with Girls Scouts of Northern California
 - ✓ Formative studies: ethnographic interviews/focus groups, initial pilot testing of concepts, messages and measures.

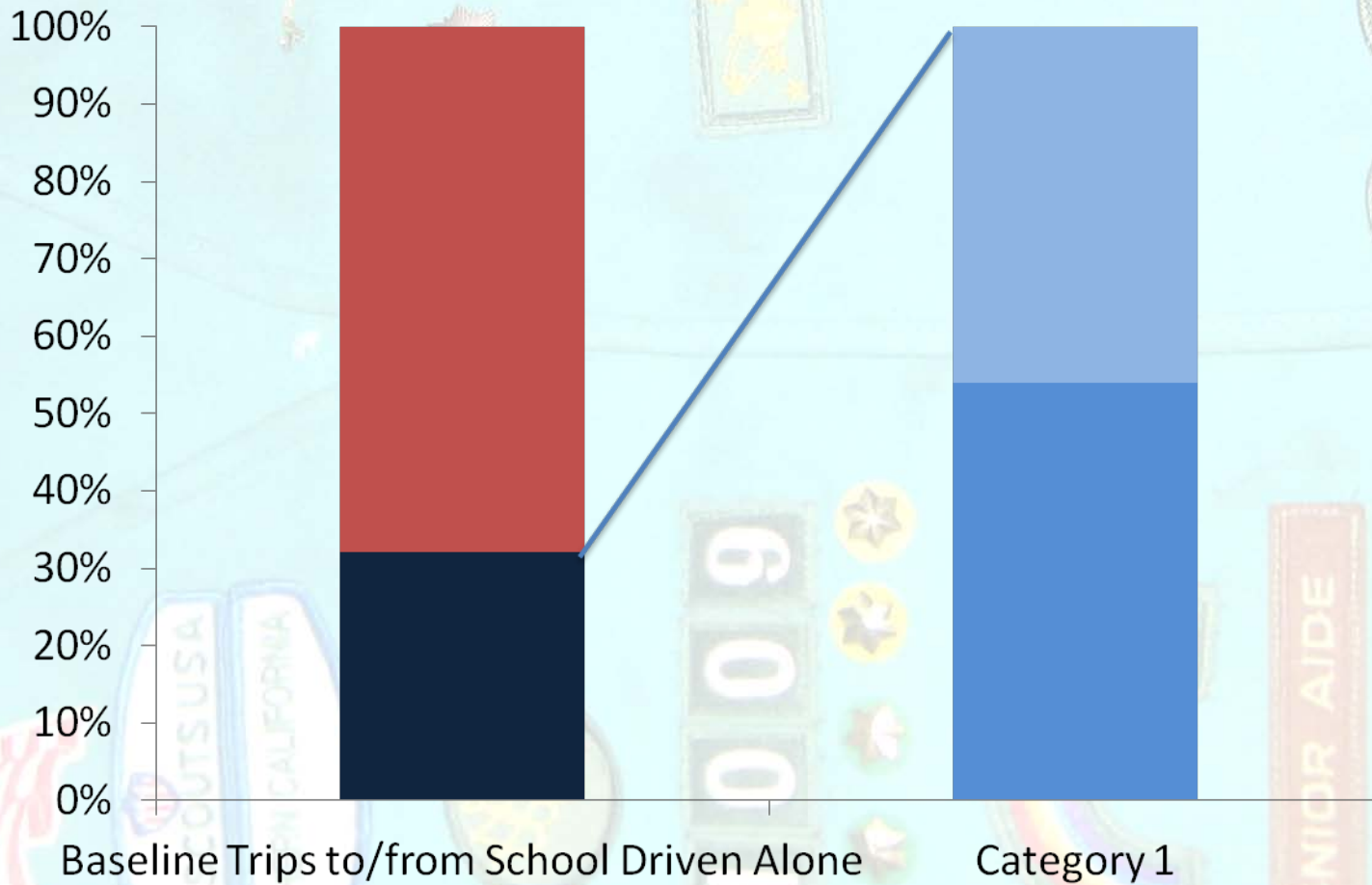
- Review of Girl Scouts materials/activities
- Girl Scouts Leadership (National/Northern CA)
- Interviews & pilot activities at a Girl Scouts Green camp
- Interviews of Local troop leaders

- ✓ IRB Human Subjects proposal submitted
- ✓ Identified target behaviors
- ✓ Proposed framing

- Advocacy using mixed media

- 
- 3- to 6-month follow-up girl and parent surveys (*In progress: complete for 20 troops*)**
 - Collecting household electricity and gas use data (*In progress*)**
 - Complete data keypunching, cleaning, QA checks, and database creation (*In progress: complete for baseline and post*)**
 - Data analysis and write-up of results (*In progress*)**
 - Disseminate findings to Girl Scouts, researchers, schools, planners, utilities, and policy makers**
 - Package and disseminate curricula for Girl Scouts of Northern California (subsequently Girl Scouts USA)**
 - Disseminate findings and curricula to a broader audience**

Results: Girl Food & Transport



GLEE Project schedule

Sept-Nov 2010: Intervention development

Sept-Dec 2010: Troop recruitment for full-scale RCT (N=30)

Nov-Dec 2010: Pilot test with 2 troops

Jan-Jun 2011: Implement full-scale RCT (N=331 girls/families)

May-Jan 2012: 3- to 6-month follow-up

GLEE newscasts

