

Experimental Design and Logic Models

Three major components of any behavior pilot



Starting with a target population



University students in sub-metered dorms

Starting with a target intervention

Endorsement
from trusted
messenger



Starting with a target behavior to change



Select a green energy provider

Three major components of any behavior pilot

Will my target intervention work well with the population I must use?

Has prior research shown that my target intervention is effective in changing my target behavior?



Are there any characteristics of this population that limit the types of behaviors you can ask to be changed?

Does your target population limit how we can measure energy reduction due to our interventions?

Can I isolate and measure the specific target behavior I want to change?

What interventions are best suited to change my target behavior?

Three major components of any behavior pilot

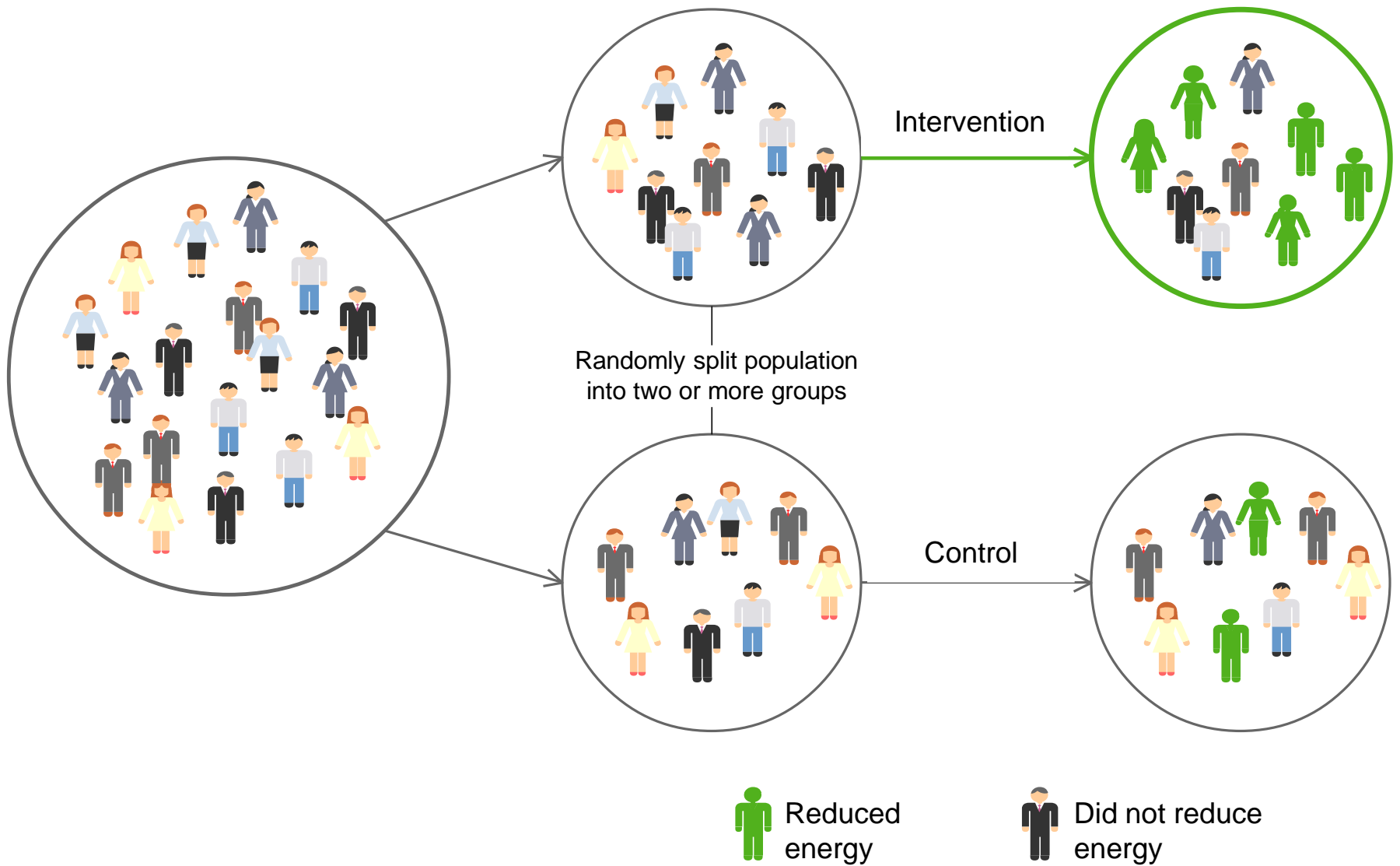
Start
anywhere...



but go full
circle!

The two main types of experiments

True Experiments

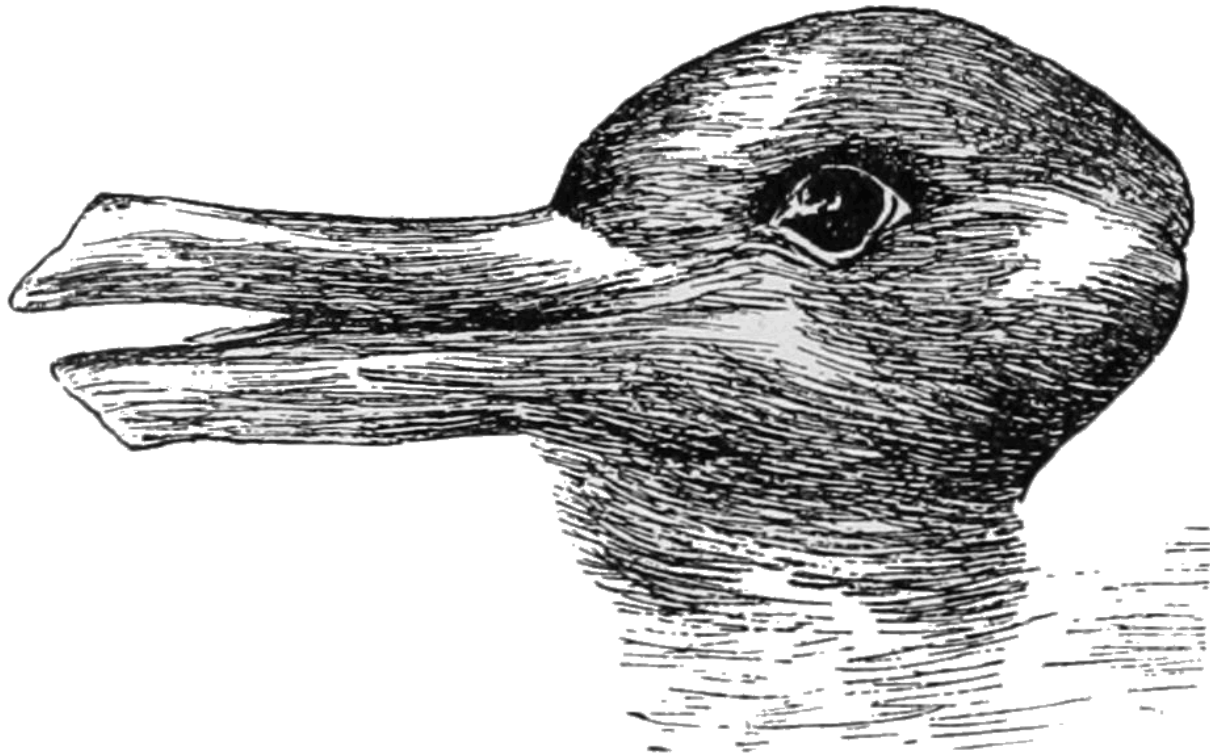


True experiments are all about randomization

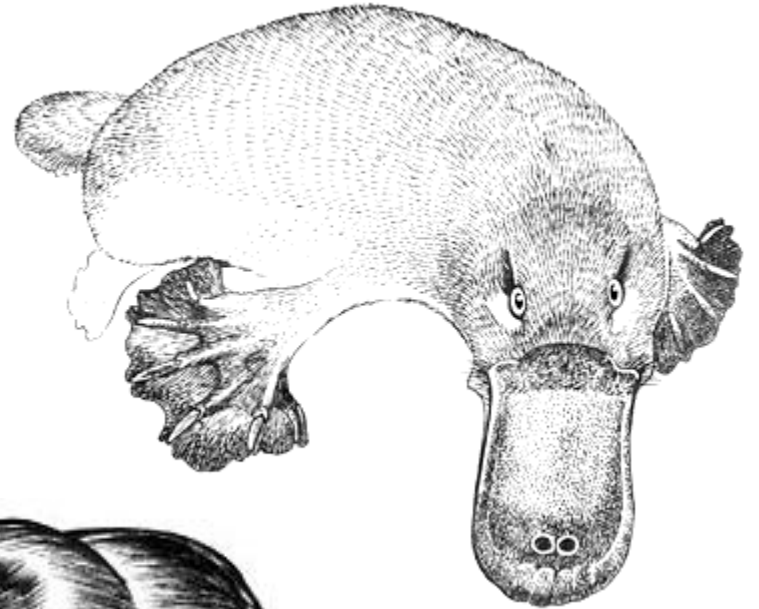
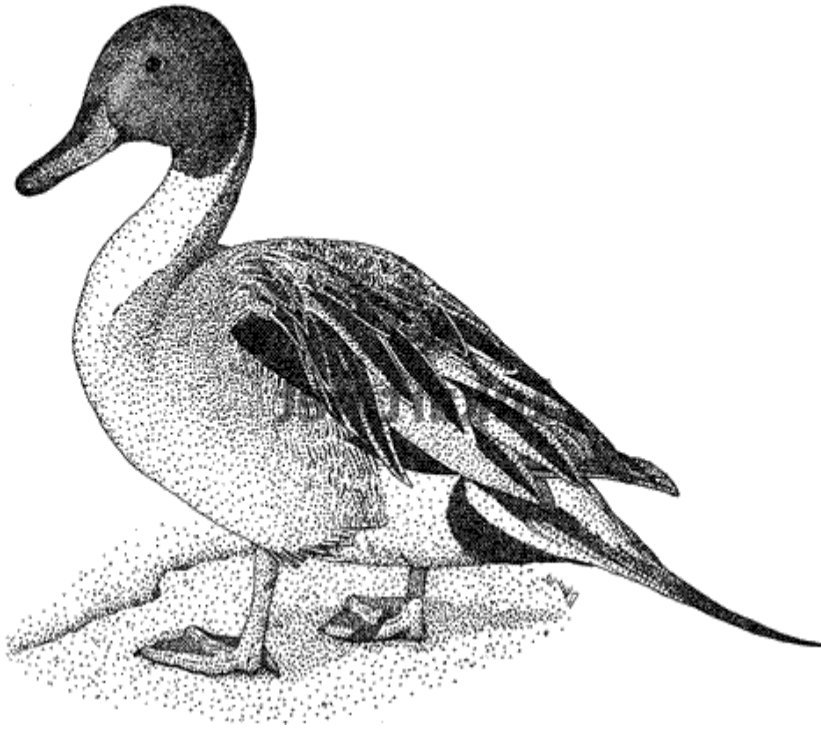
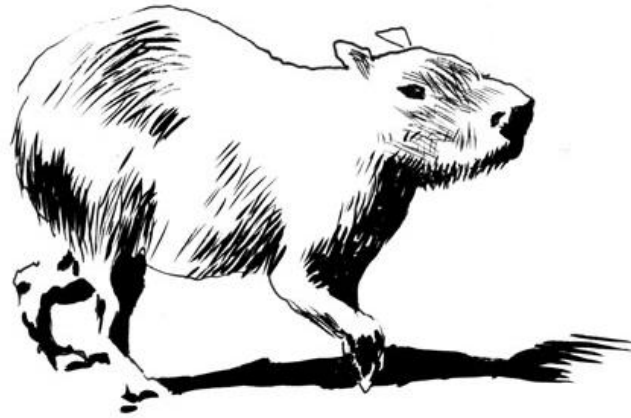
- Once you have randomly assigned participants to your groups – you can assume they are **EQUAL** in all ways
- Then...
 - *You intervene in one or more groups*
 - *but you leave one alone*
- Once the experiment is underway...
 - *You measure the differences between the groups*
- Since you started with equivalent groups you can infer **CAUSALITY**

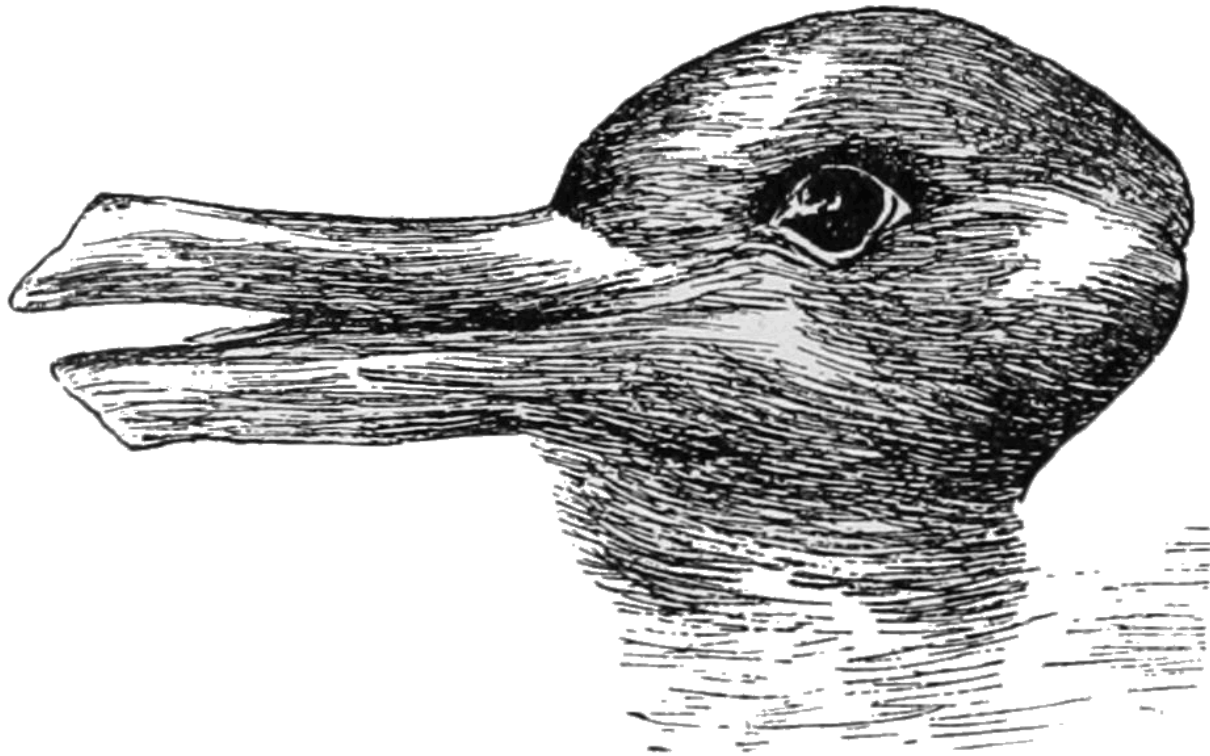
Aside on Randomization

**Control Group
(Even Numbers)**



Experimental Group (Odd Numbers)

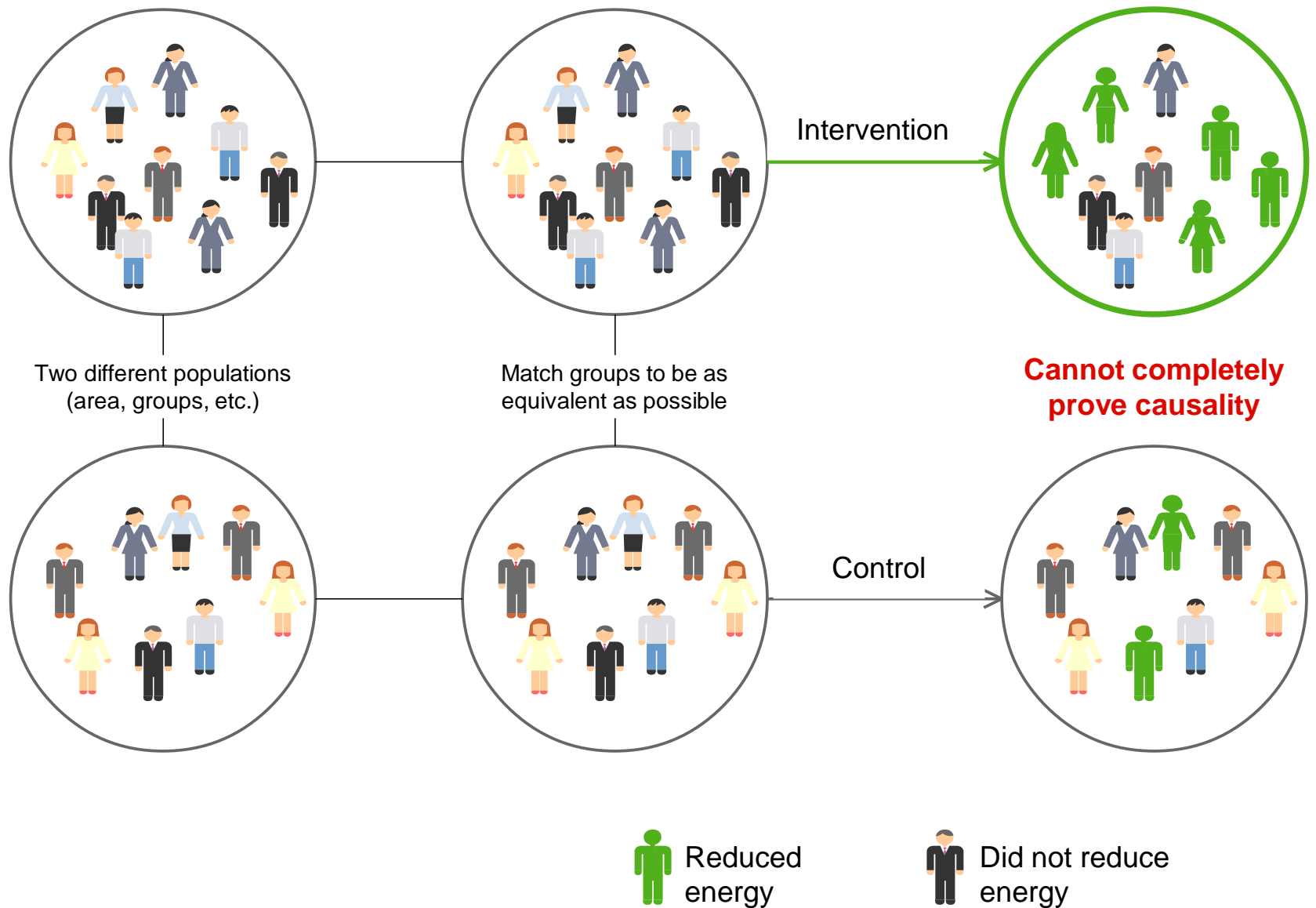




Discussion

**When you can't
randomize**

Quasi-Experiments



Quasi-Experiments are all about making groups as similar as possible

- You want to show that your intervention **CAUSED** the change in behavior
- But...
 - *You cannot infer causality with quasi-experiments*
 - *There will always be doubt!*

That's ok!

- You will have to work hard to show that your groups are as similar as they can be
 - *Then you can suggest causality*

Logic Models

Role of Logic Models



- ✓ Where are you going?
- ✓ How will you get there?
- ✓ What will tell you that you've arrived?

A logic model is your program *road map*

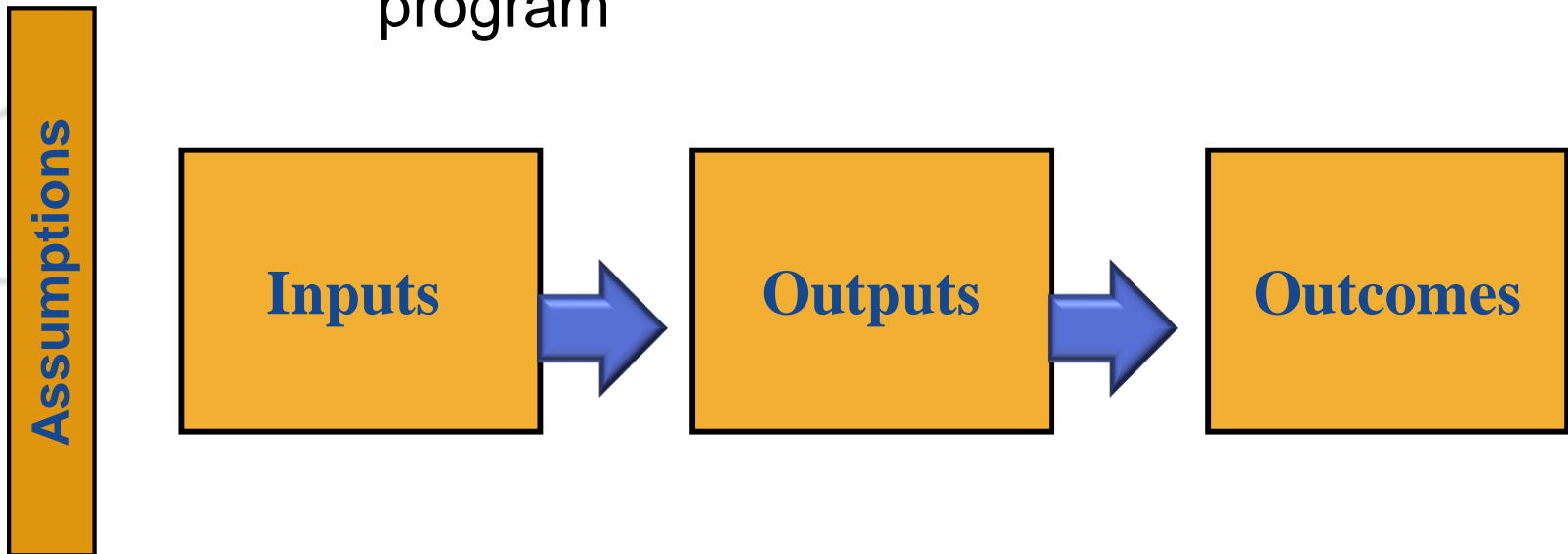


Logic Models Help:

- Develop indicators of program progress
 - *Main effects may be medium or long term*
- Communicate program process
 - *Everyone on the same page*
- Prioritize EM&V
 - *Do we need to measure everything?*

Build Your Logic Model

A graphic representation that shows logical relationships between inputs, outputs, and outcomes relative to a situation that shows the theory and assumptions underlying the program



Tip: Start with the end in mind!

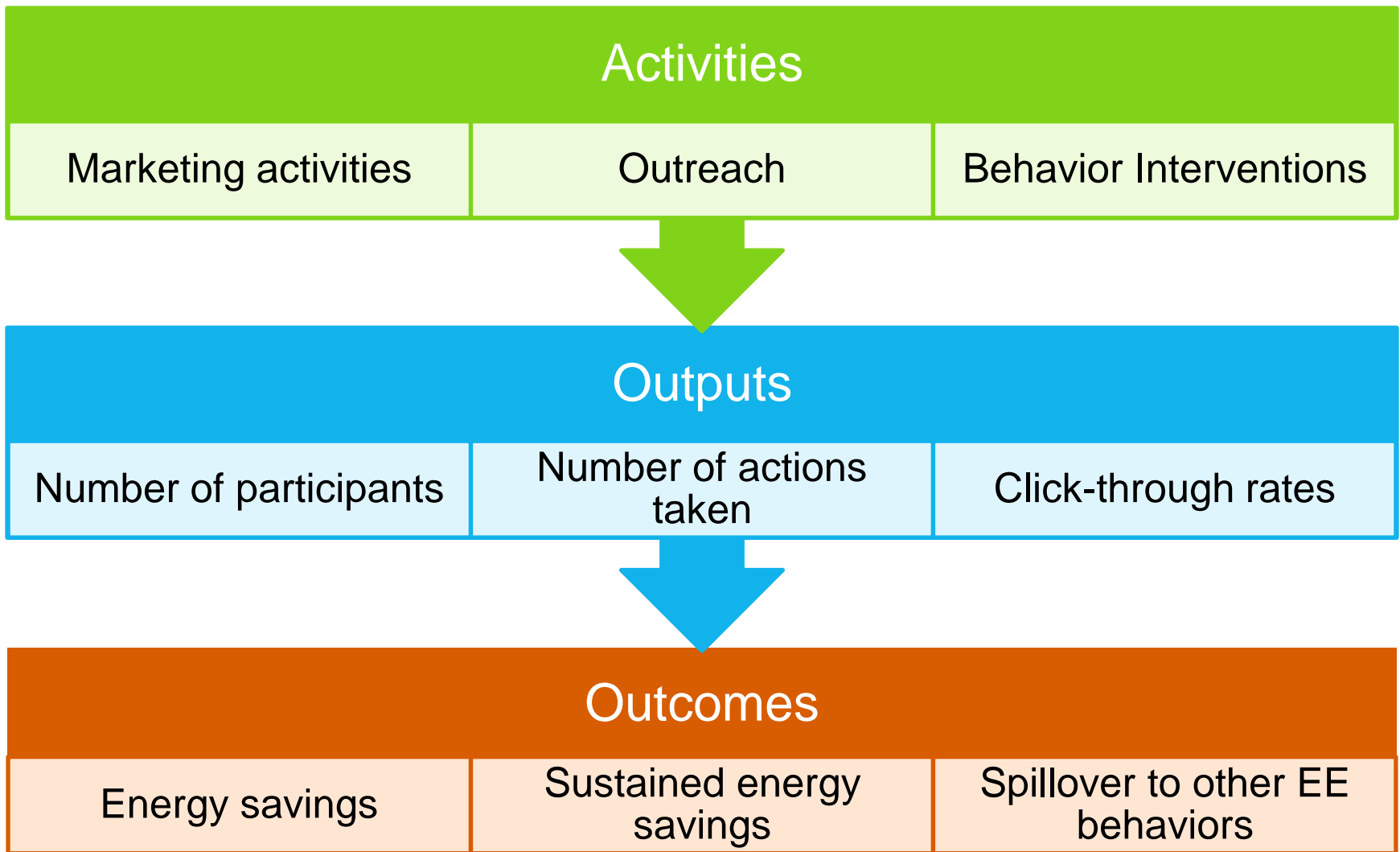
Developing a Logic Model – Assumptions

Summarize program assumptions: what the program will do, how it will do it

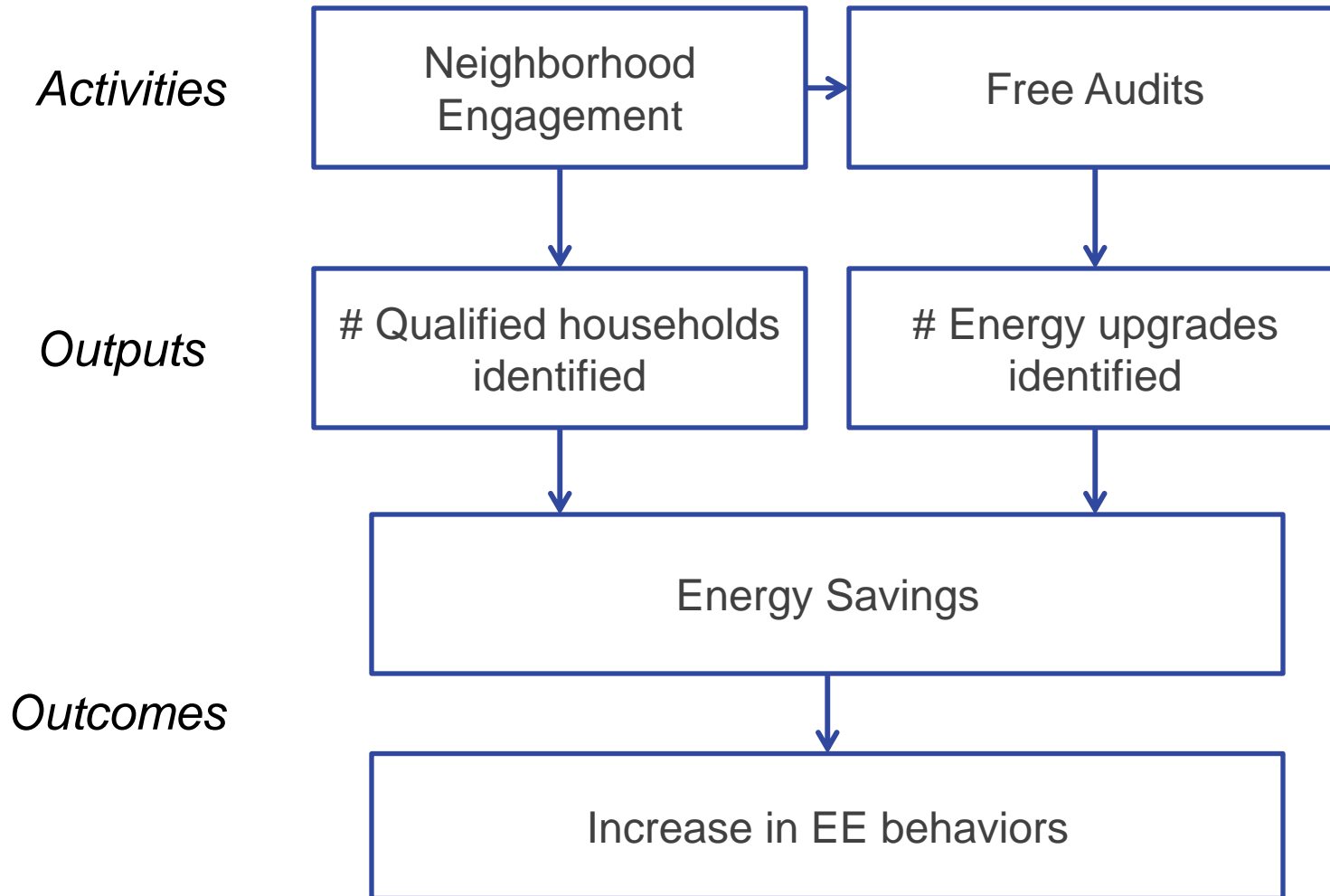
Example for an ENERGY STAR Manufactured Homes program::

- ✓ If manufacturers are introduced to the program and learn about incentives to reduce costs to manufacture homes above HUD standards and to ENERGY STAR specifications, then manufacturers will modify their standards and methods to build ENERGY STAR Manufactured Homes.
- ✓ Retailers and other market actors will be educated about the benefits of the ENERGY STAR Manufactured Homes and energy efficient construction.
- ✓ Market actors will market the homes, in turn educating the public and increasing awareness for the product, transforming the marketplace for New Energy Star Manufactured Homes. Purchasers of new homes will achieve energy and demand savings.

Using logic models



Using logic models



Refrigerator/Freezer Recycling Program

The primary objective of the Refrigerator/Freezer Recycling Program is to offer customers an attractive option to encourage early disposal of their functional, inefficient primary or secondary “residential-type” refrigerators and stand-alone freezers.

- The utility has offered a refrigerator/freezer recycling program, using the same contractor and approach, since late 2004. This year the deemed energy savings are being adjusted downward significantly. However, more favorable pricing terms with the contractor is helping to offset this impact so that the overall program cost-effectiveness remains very favorable.

Program Goals:

- The goal of the Program in 2011 is to recycle approximately 4,500 inefficient refrigerators and freezers and achieve 0.327 aMW of electrical savings.

Exercise

- Develop a Logic Model for Refrigerator/Freezer Recycling Program

Exercise:

- What behavior approach could increase participation?
- Sketch out the logical relationships in a logic model.
- Think about how you would design an experiment to test the impact.

Using logic models

