

[What, why, and which experiments?],  
[Moving beyond simple experiments], [Making it happen],  
[Zero variable cost data and MusicLab], [3 Rs]

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- 1) Introduction
- 2) Observing behavior
- 3) Asking questions
- 4) Running experiments
- 5) Mass collaboration
- 6) Ethics
- 7) The future

# Optimization experiments vs Understanding experiments

Optimization experiments + Understanding experiments

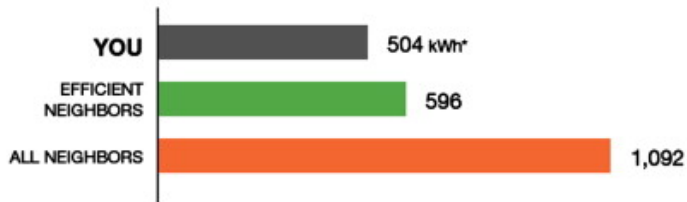
# The Constructive, Destructive, and Reconstructive Power of Social Norms

P. Wesley Schultz,<sup>1</sup> Jessica M. Nolan,<sup>2</sup> Robert B. Cialdini,<sup>3</sup> Noah J. Goldstein,<sup>3</sup> and Vidas Griskevicius<sup>3</sup>

<http://dx.doi.org/10.1111/j.1467-9280.2007.01917.x>

## Last Month Neighborhood Comparison

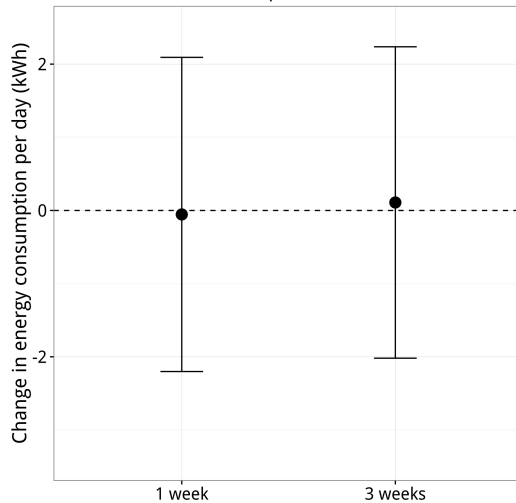
Last month you used **15% LESS** electricity than your efficient neighbors.

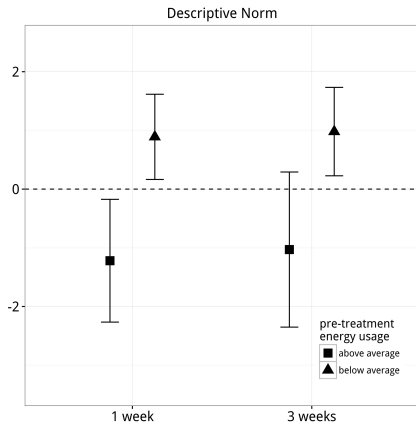
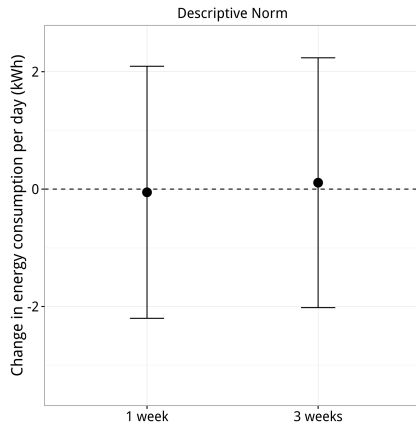


\* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

Figures from Allcott (2011)

Descriptive Norm

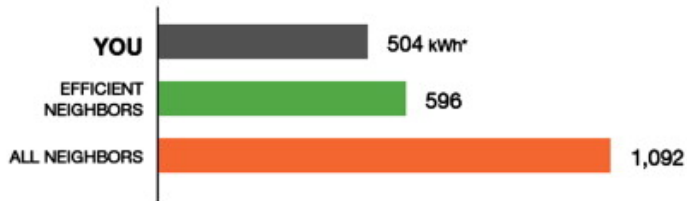






## Last Month Neighborhood Comparison

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\* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

YOUR EFFICIENCY STANDING:



**GREAT**



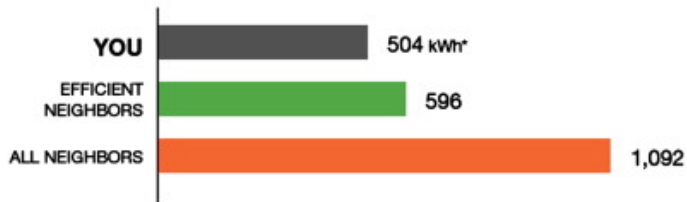
GOOD 😊

BELOW AVERAGE 😞

Figures from Allcott (2011)

## Last Month Neighborhood Comparison

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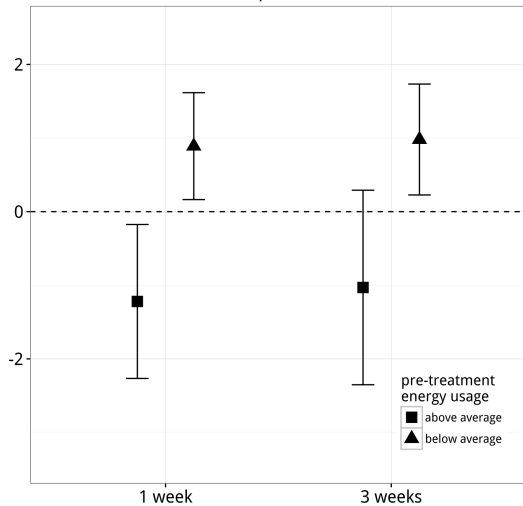
\* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

YOUR EFFICIENCY STANDING:

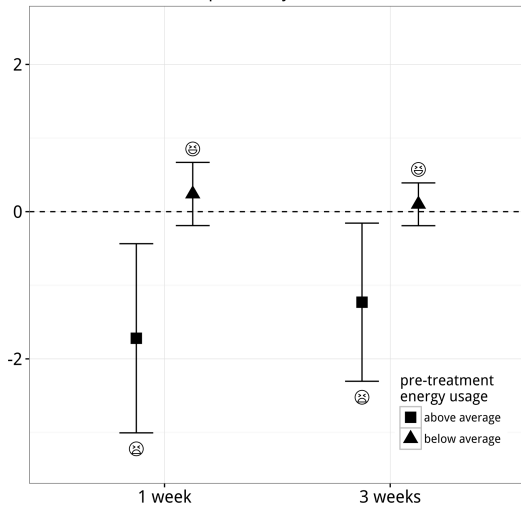


Figures from Allcott (2011)

Descriptive Norm



Descriptive + Injunctive Norm



If you want to move beyond simple experiments:

- ▶ Validity
- ▶ Heterogeneity of treatment effects
- ▶ Mechanisms

## Validity

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- ▶ statistical conclusion validity
- ▶ internal validity
- ▶ construct validity
- ▶ external validity

## Heterogeneous treatment effects

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- ▶ lots of people, lots of pre-treatment information: stop treating people like widgets



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- ▶ beware of fishing

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- ▶ lots of people, lots of pre-treatment information: stop treating people like widgets
- ▶ beware of fishing
- ▶ Lots of new methods in this area

## Mechanisms

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- ▶ Not as easy as scurry and limes, “Enough already about black box experiments”  
[Green et al \(2010\)](#)

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- ▶ Not as easy as scurry and limes, “Enough already about black box experiments”  
[Green et al \(2010\)](#)
- ▶ Experiments specifically designed to test mechanisms: [Ludwig et al \(2011\)](#), [Imai et al \(2012\)](#), [Pirlott and MacKinnon \(2016\)](#)

Optimization experiments + Understanding experiments

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This is particularly important if you want to partner with the powerful. But it is very hard.

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