JYUKANKYO RESEARCH INSTITUTE INC.

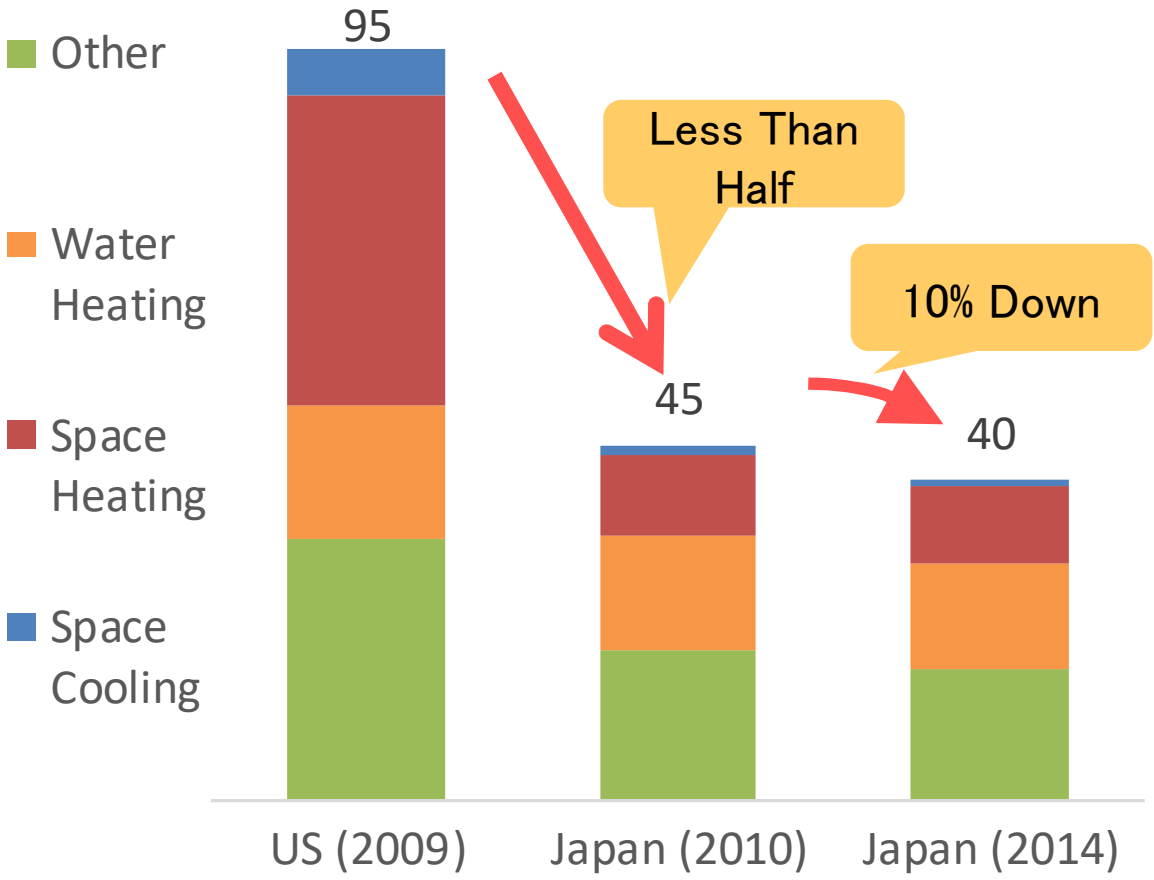
BECC 2016 Conference

Home Energy Report Pilot: Large-scale look at consumer behavior in Japan

21 Octorber 2016
Renaissance Baltimore Harborplace Hotel

Sho Hirayama
Jyukankyo Research Institute Inc.

Residential Energy Consumption in Japan

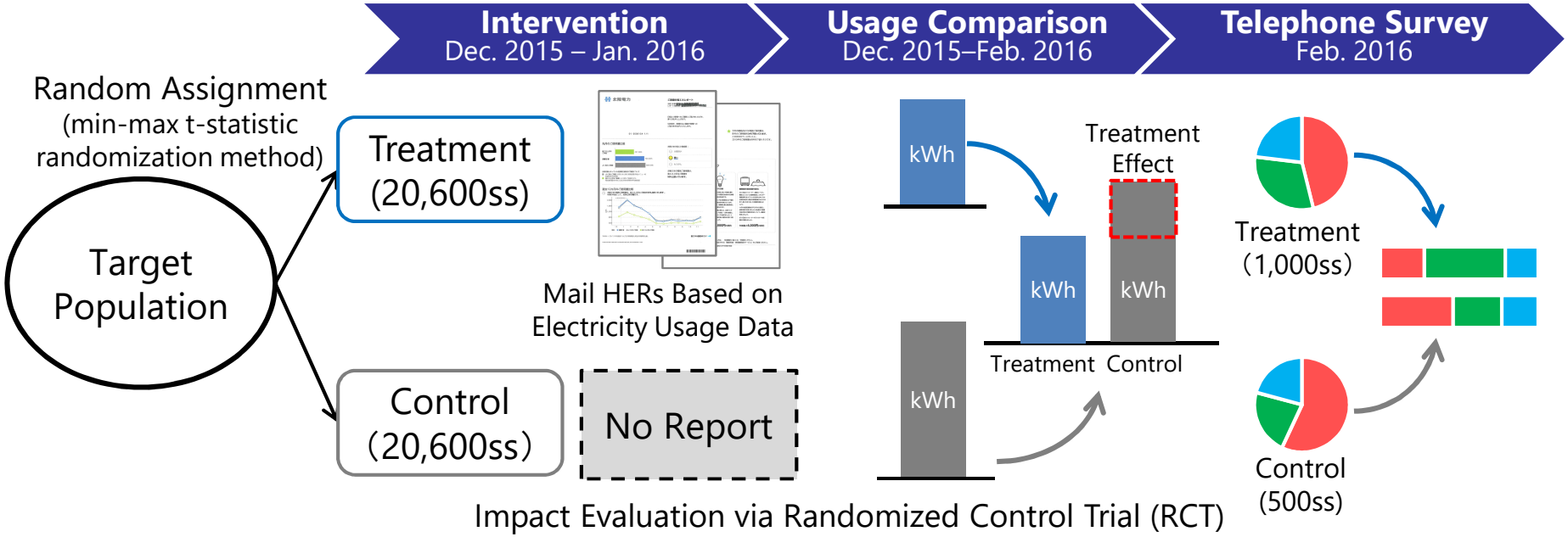


Final Energy Use per Household (GJ/year)

(Source) U.S. Energy Information Administration, Residential Energy Consumption Survey.
Japan: Jyukankyo Research Institute Inc., "Residential Energy Statistics Yearbook"

- Japanese household use less than half of energy compare to US in 2010.
- After Fukushima accident, that decreased by 10% via voluntary consumer behaviors.
- Is Home Energy Report (HER) still effective even in Japan?

Outline of the Study



① 41,200 households were randomly assigned to treatment and control groups.

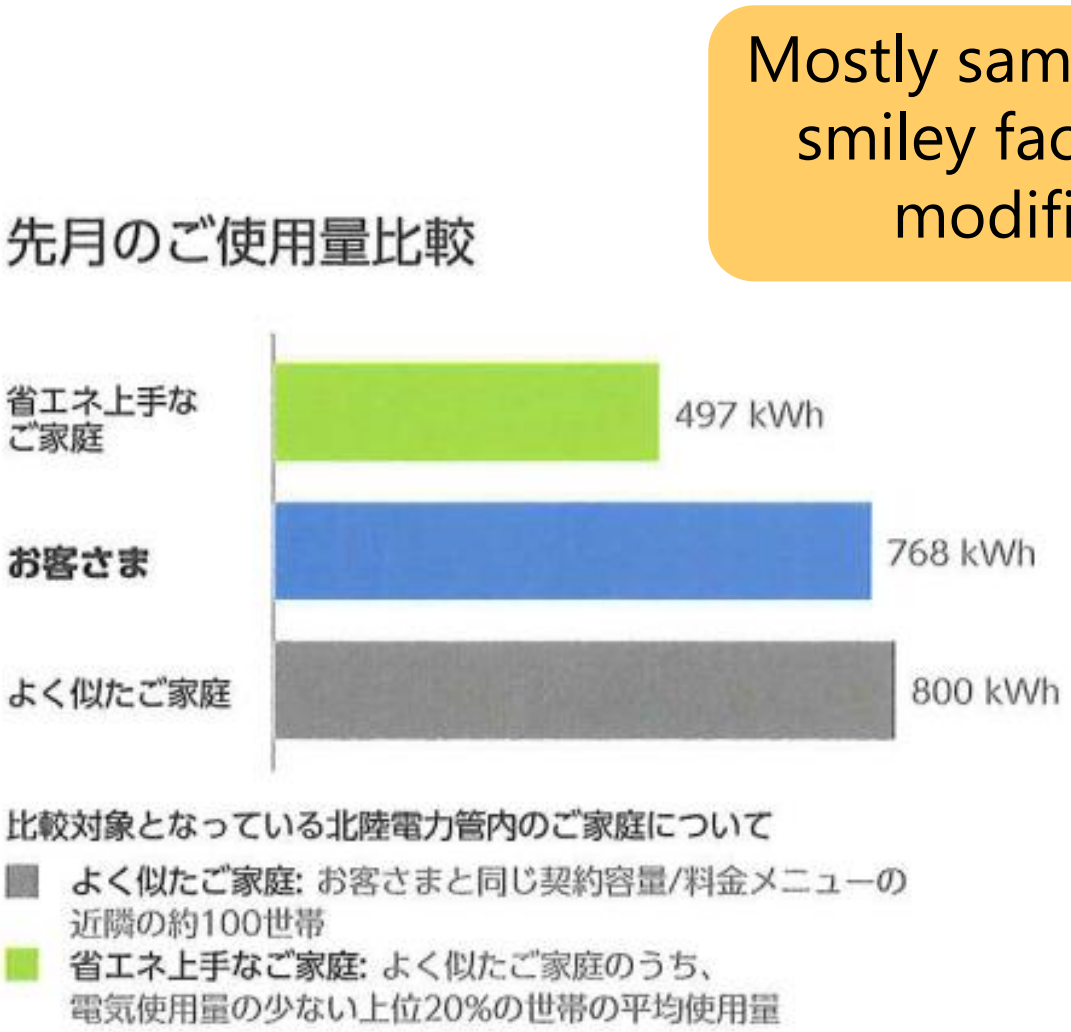
② HERs were mailed twice to the treatment group during winter.

③ Saving impact was analyzed by comparing electricity usage across both groups.

④ EE awareness and behaviors were measured via a phone survey.

Neighbor Comparison in Japanese Version HER

Mostly same as US, smiley faces are modified



Energy Efficiency Tips Used in Hokuriku Pilot

6 tips are selected for Hokuriku's winter

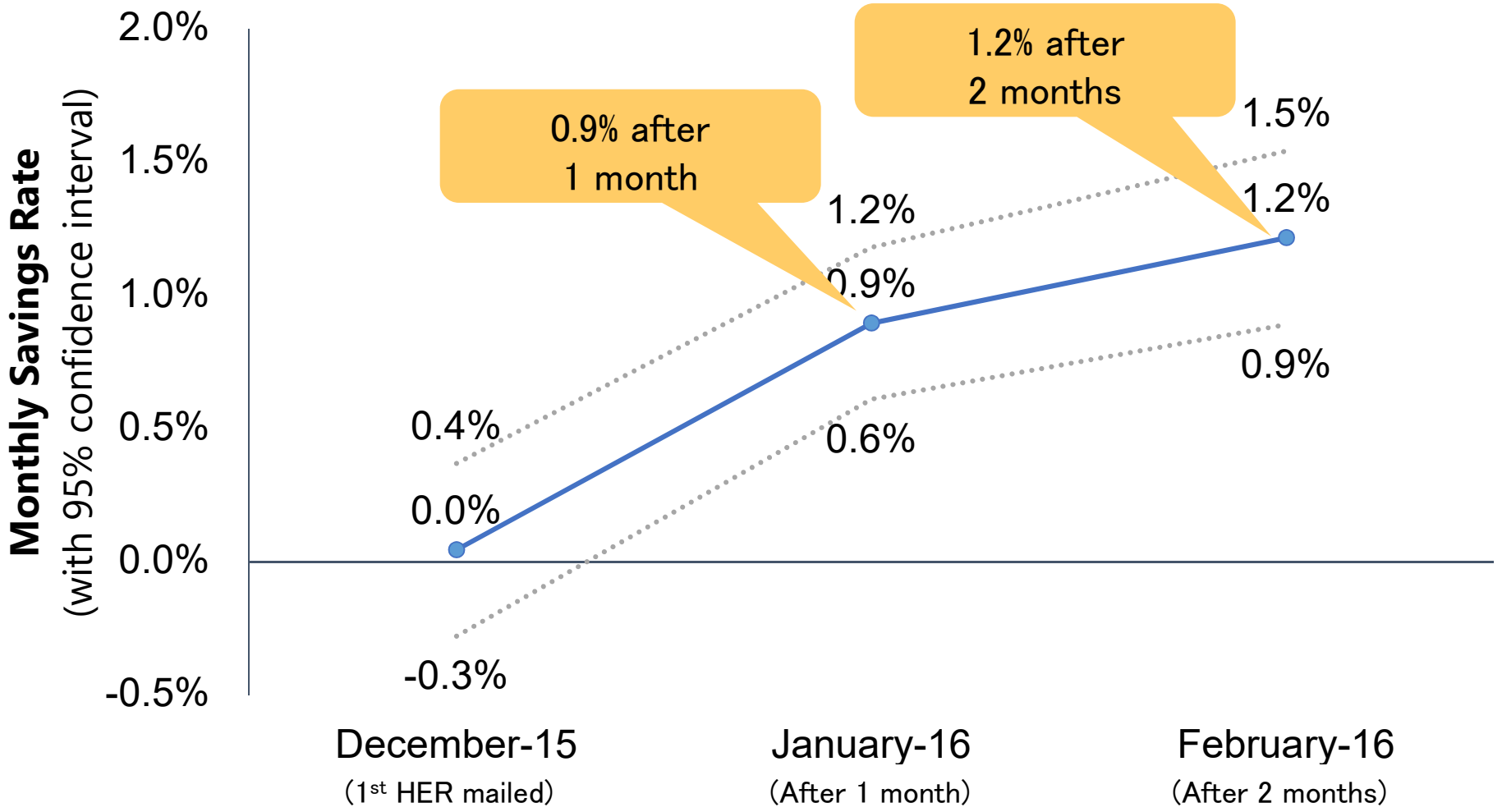
A modern Japanese kotatsu
(Source) http://en.wikipedia.org/wiki/File:Kotatsu-tastefulTN.jpg

Close window shades to prevent cold air

Use energy-efficient light bulbs

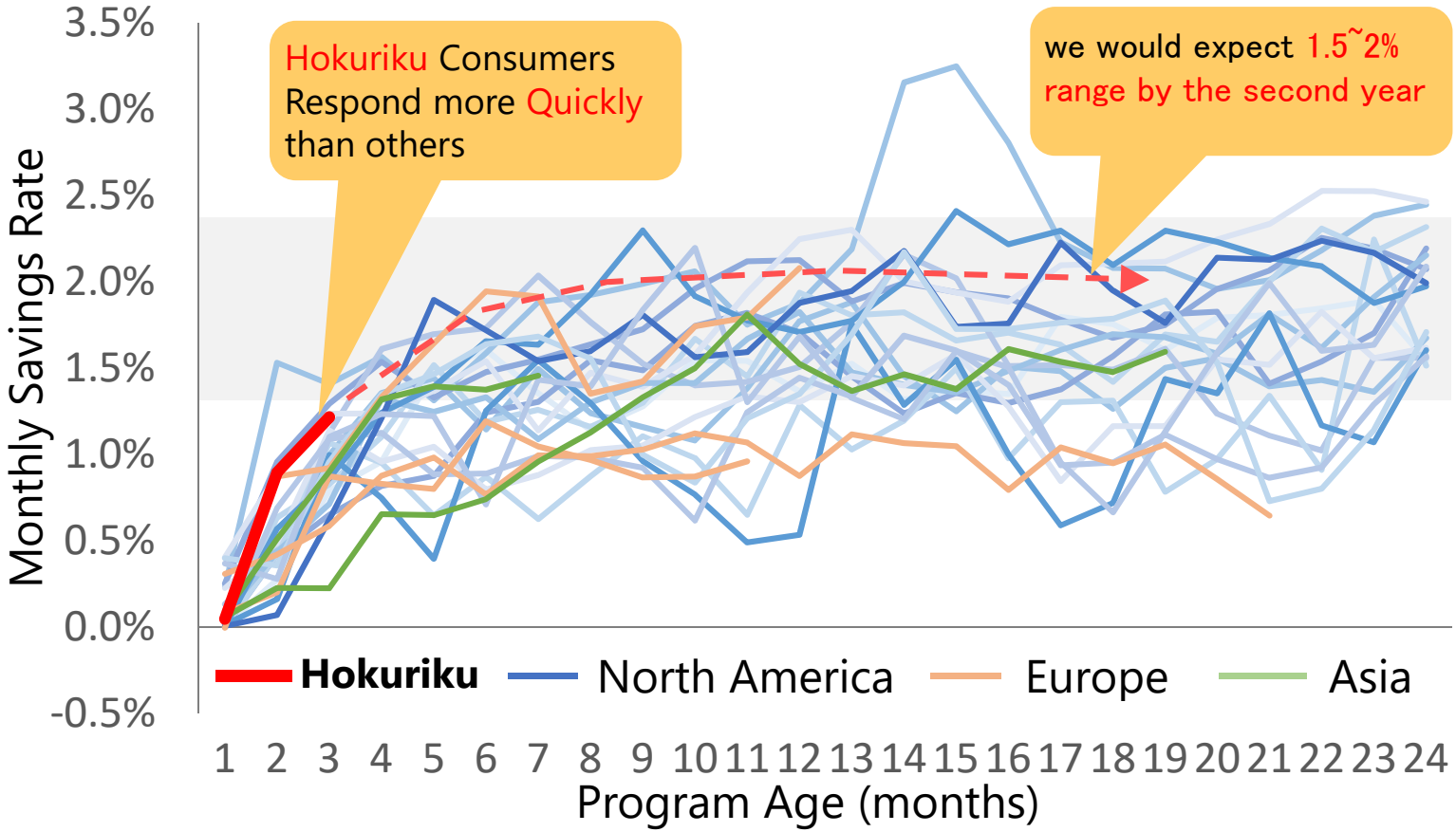
Set the temperature of heating appliances relatively low

Estimated Program Savings Impact



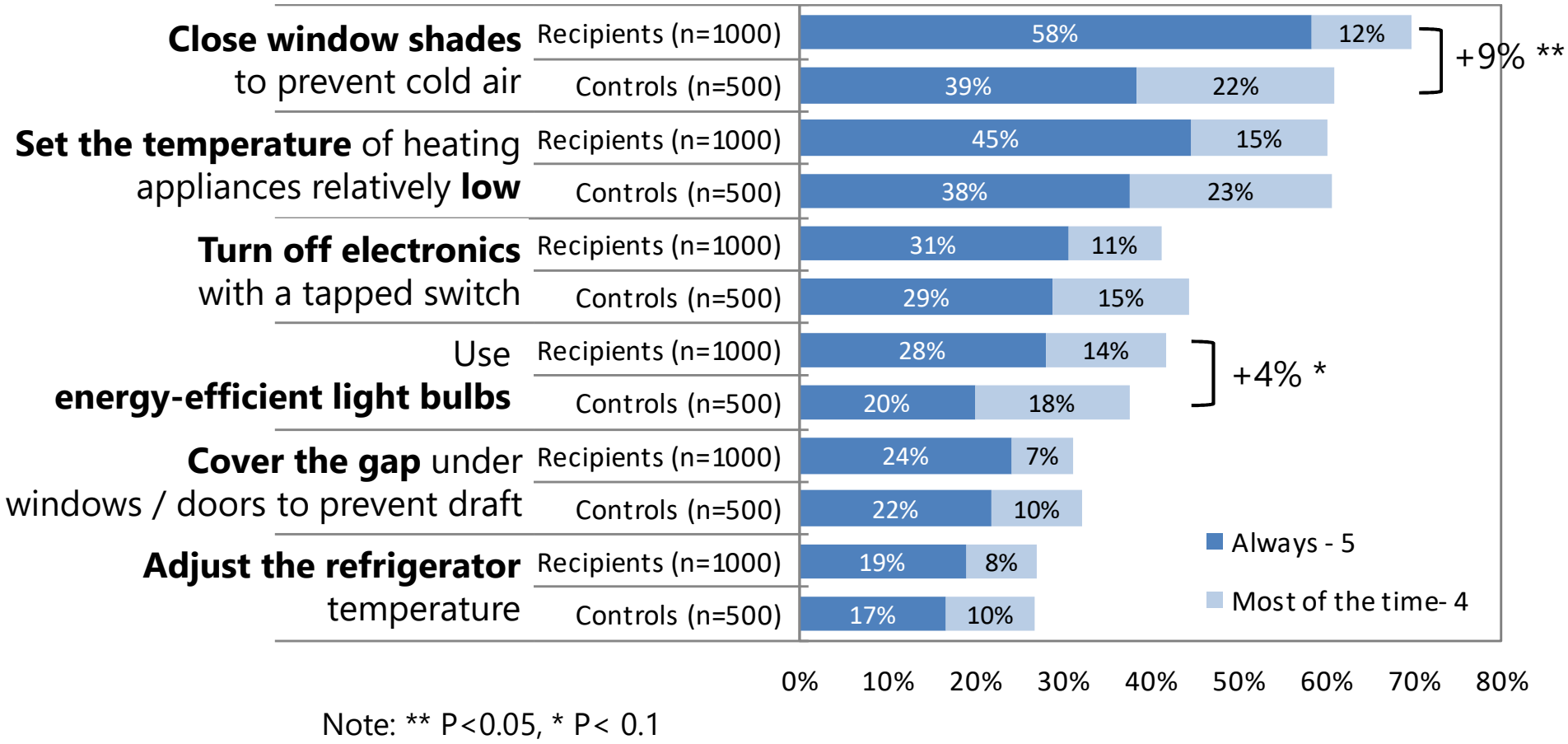
Note: Monthly Savings Rate (%) = Decrease rate of Treatment group's electricity usage compare to control group calculated via Panel Data Regression Analysis.

Comparison of EE impact in Hokuriku with Other Opower's programs



- Hokuriku consumers respond more quickly than other programs.
- If the program were to continue, we would expect steady savings in at least the 1.5~2% range by the second year.

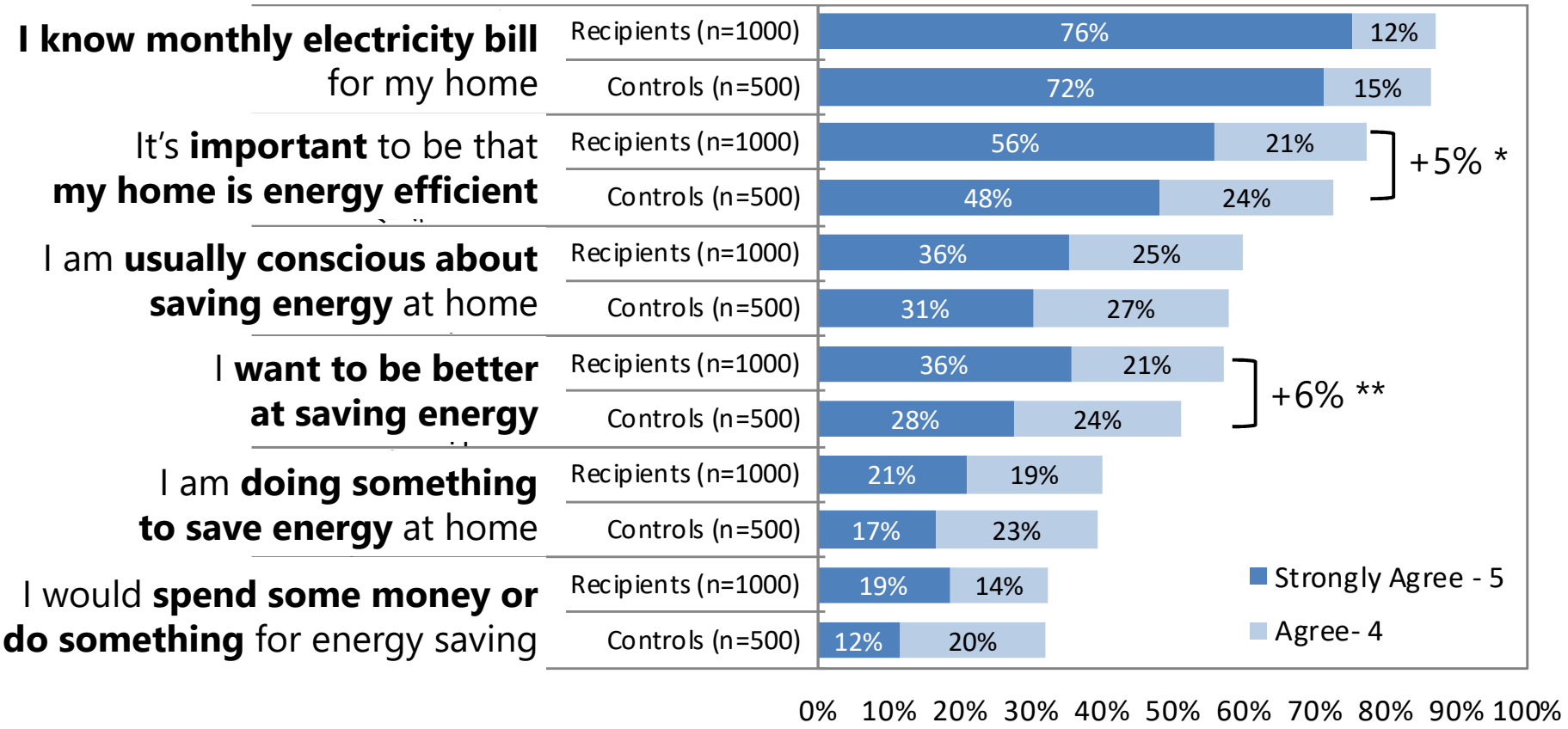
Energy Efficiency Behaviors' Frequency



Note: ** P<0.05, * P< 0.1

- HERs Recipients have a high frequency of all EE Behaviors compared to Controls.

Energy Efficiency Attitudes



Note: ** P<0.05, * P< 0.1

- HERs Recipients strongly agreed to all EE Attitudes compared to Controls.
- HERs improved the frequency of EE behaviors and Attitudes.

Conclusions & Recommendations

- **Conclusions**
  - HERs recipients (treatment group) lowered their usage 1.2% on average compared to control group.
  - HERs improved the frequency of EE Behaviors & EE attitudes.
- **Future Issues**
  - Continued Measurement of Long-Term Impact of Behavioral EE Programs.
  - Evaluating Impact in other parts of Japan and other seasons.

Thank you!

Acknowledgment

- This study ("2015 Research Report on the Effects of Energy-Usage Information Provision on Residential Behavioral Energy Efficiency") was commissioned by the Japanese Ministry of Economy, Trade & Industry (METI) and carried out jointly by Jyukankyo Research Institute, Inc., Opower Japan, and Hokuriku Electric Power Company.

- The full report (Japanese) can be found here: http://www.meti.go.jp/meti_lib/report/2016fy/000233.pdf