Accelerating the Twin Transition with Digital Tools

Taking up digital government from within

There is a treasure trove in government, **utilities, and households**

This enables a feedback loop to improve sustainability – achieving a “twin transition”

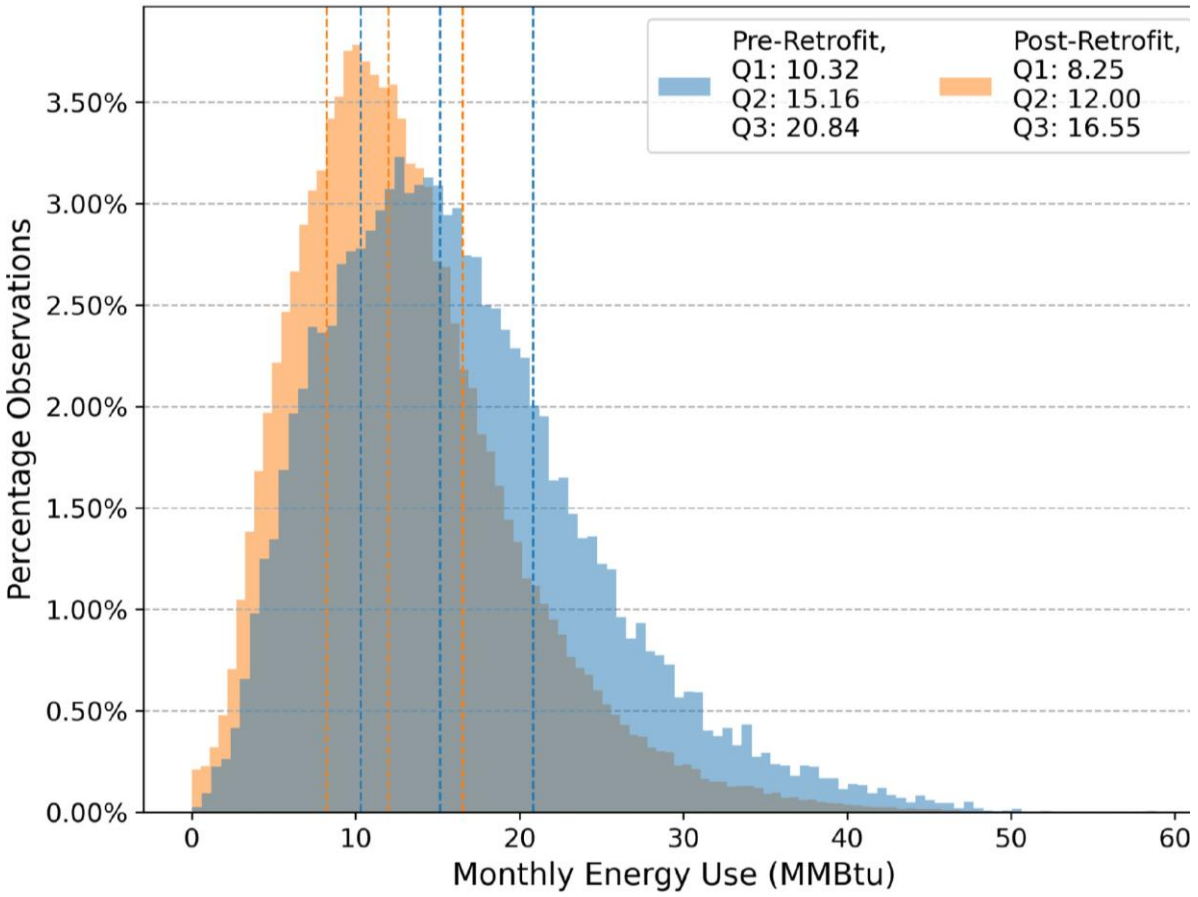
Example 1: Better data -> Better targeting?

- Incentives to promote energy efficiency investments have had mixed success (e.g. Greenstone et al., 2017)
- Partially due to wide ranging differences in impacts across population groups (e.g. Boomsa et al., 2025)
- **Can better data systems be used to improve targeting and returns on investment?**

Christensen et al., JPubE, 2024

Example 1: Better targeting -> Better results?

- Illinois Home Weatherization Assistance Program is estimated to generate 93c for every dollar invested after retrofitting 13,638 households
- Combing high frequency billing, usage and demographic data, machine learning approach can identify HHs with highest net present benefit.
- Targeting these households would increase return from 93c to $1.23 for every dollar invested

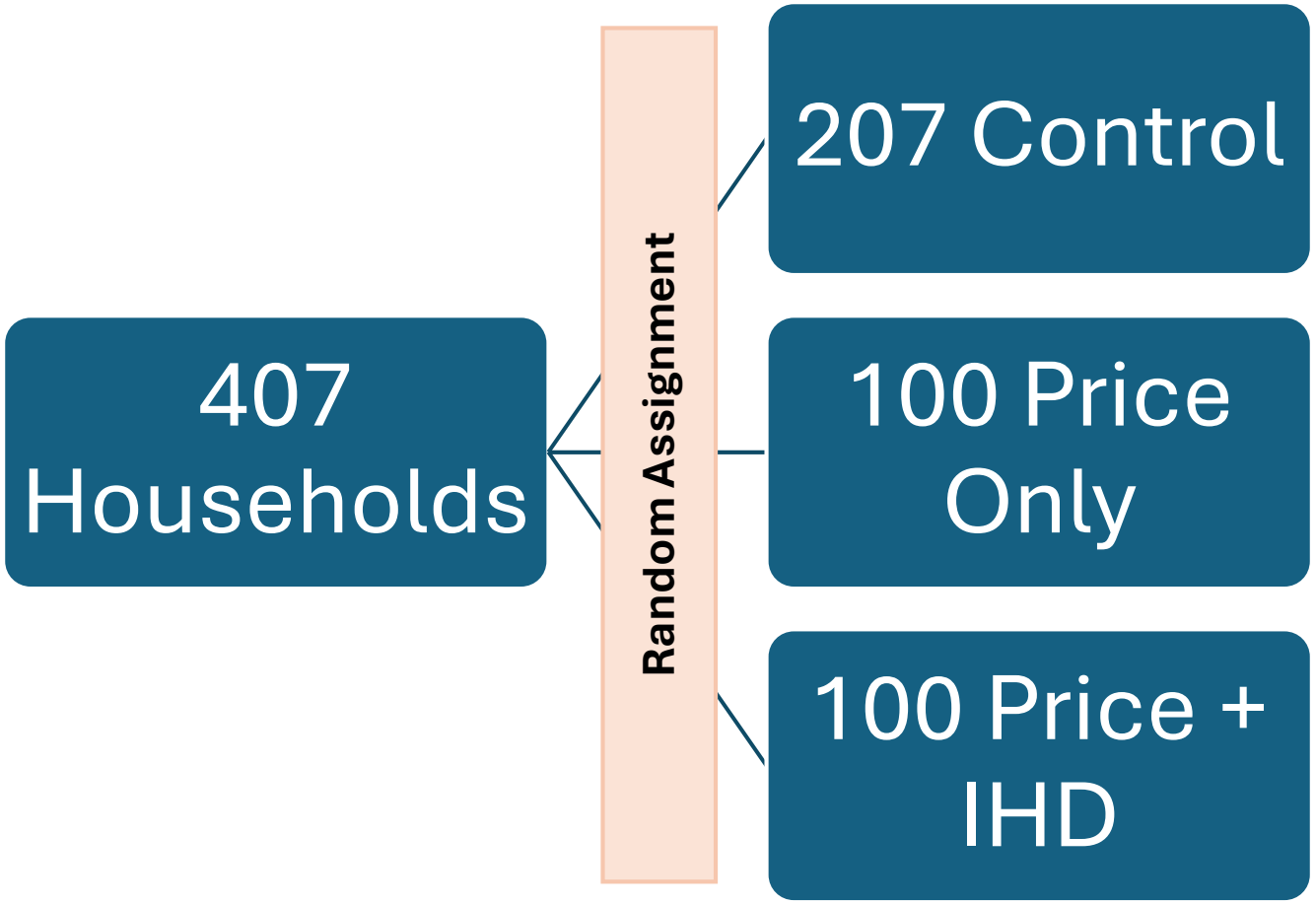


(b) Winter Months

Example 2: Combining Energy Pricing with Feedback

- Variable electricity pricing is used to reduce energy demand during peak loads. (ref)
- Feedback systems share energy use back to customers and typically reduces energy use by 2-5% (Khanna et al, 2021)
- **What happens when we combine both a pricing and a salience/feedback component?**

Example 2: Combining Energy Pricing with Feedback



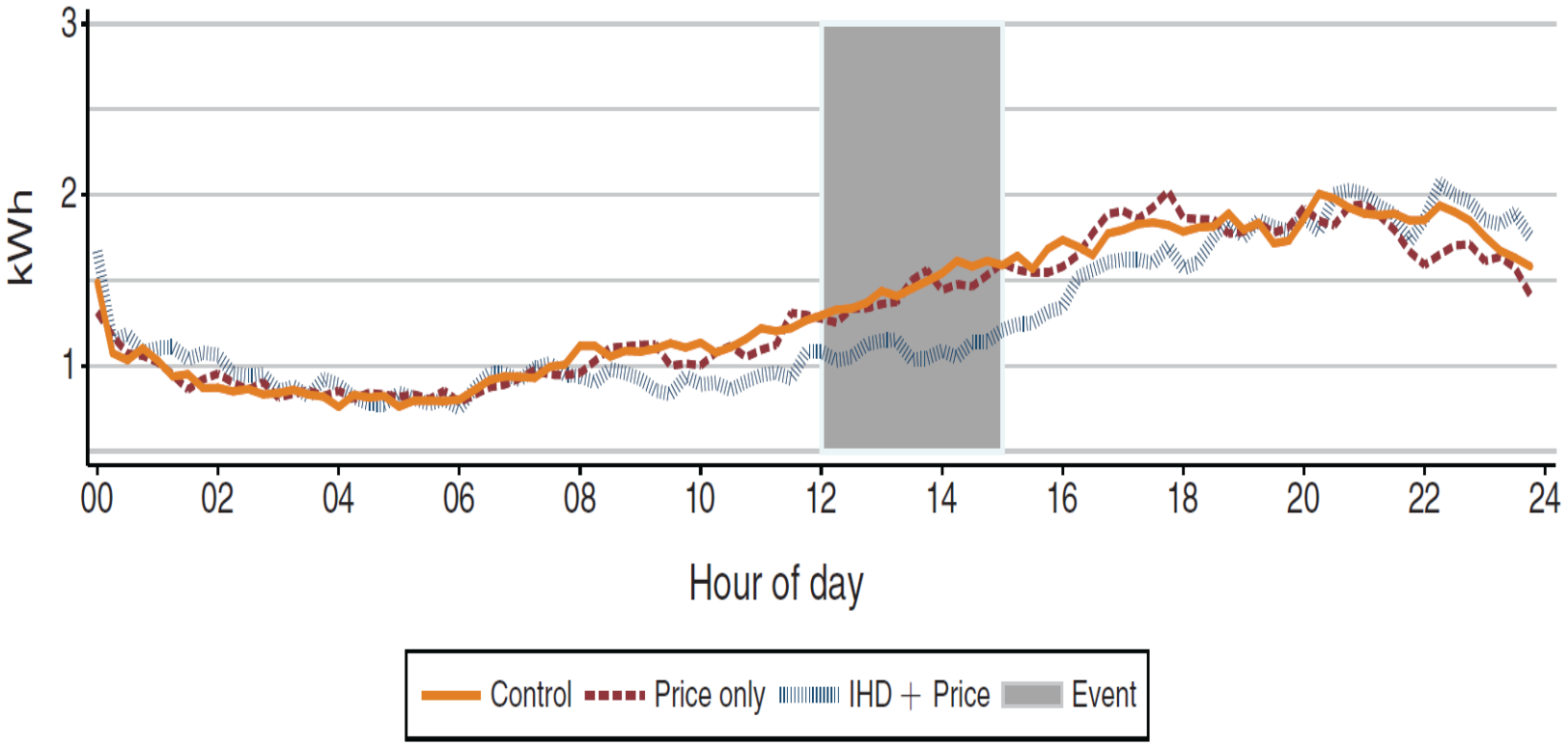
DATA

15-min smart-meter energy use
Time stamped event records
Daily temperature
Household surveys

Jessoe & Rapson, AER, 2014

Example 2: Combining Energy Pricing with Feedback

FIGURE 5. AUGUST 17, 2011: 2HR $1.25 INCREASE, 30-MIN NOTICE



FINDINGS

Pricing alone reduces elec use by **4%**

Combing with IHD reduces use by **14%**

Takeaways

- Digital systems increase data availability
- High frequency data from service providers and customers makes trial-and-adopt evaluations easier to implement
- High frequency data can also be used as an intervention itself (e.g. targeting or feedback tool)
- Combining these 3 features can help us identify effective Twin Transition opportunities

Thank you!

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