

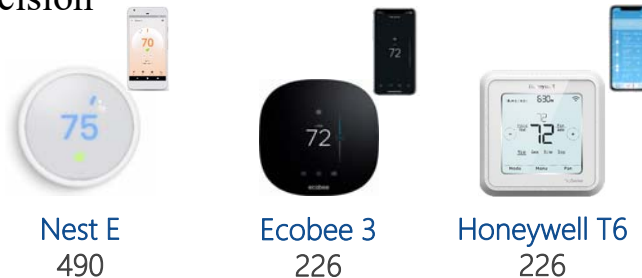
Thermostat Behavior and Responses to Smart Thermostat Installation

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Smart Thermostat Program



- Northeast Electric and Gas Utility
- Low-Income Multi-Family Smart Thermostat Pilot Program
- Occupant did not participate in installation decision



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An electric and gas utility implemented a low-income multi-family smart thermostat pilot program in their northeastern service territory in 2018. The goals of the pilot were to develop an understanding of the multi-family low-income market segment, identify barriers to the installation of smart thermostats in this market segment, and evaluate the customer experience and impacts on energy usage. The program installed Nest, Lyric, and Ecobee thermostats in 942 units within 16 buildings.

The pilot program included a comprehensive evaluation. The research entailed market characterization to assess the potential for expanded implementation; interviews with project managers, implementation staff, and building managers; a quantitative survey with 199 participants; and a usage impact analysis to estimate the impact of the program on electric and gas usage.

This presentation focuses on the participant survey, which provides important information on thermostat usage before and after the installation.

Participant Feedback



Survey Sample

- 942 customers received smart thermostats
- 468 had complete contact information, all 468 targeted for survey



Advance Letters

- Sent to 468 participants
- Explained the purpose of the survey
- Provided call-in option

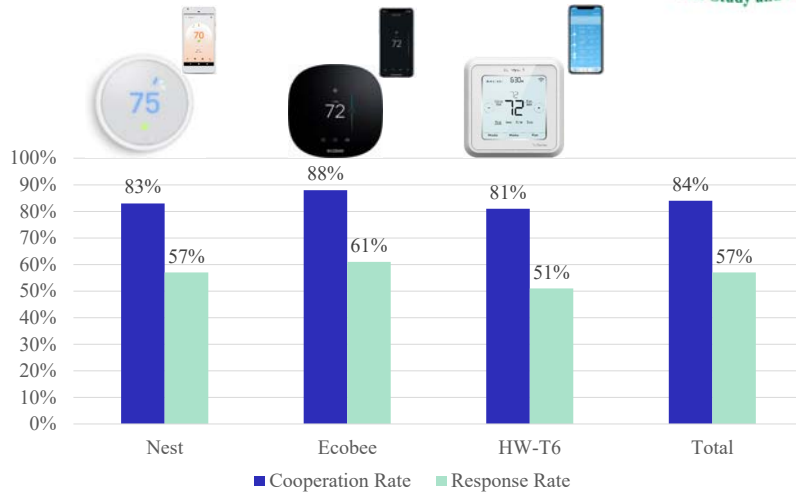


Interviews

- 10-minute telephone interview
- Calls made day, evening, and weekends
- 199 interviews completed

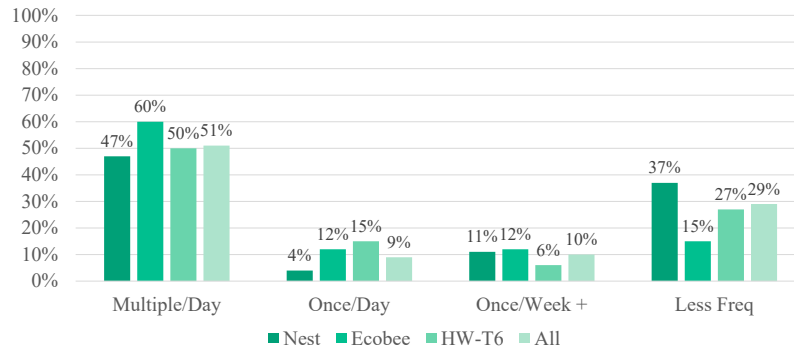
A survey was conducted with 199 program participants.

Participant Feedback



The response rate was 57% and the cooperation rate was 84%.

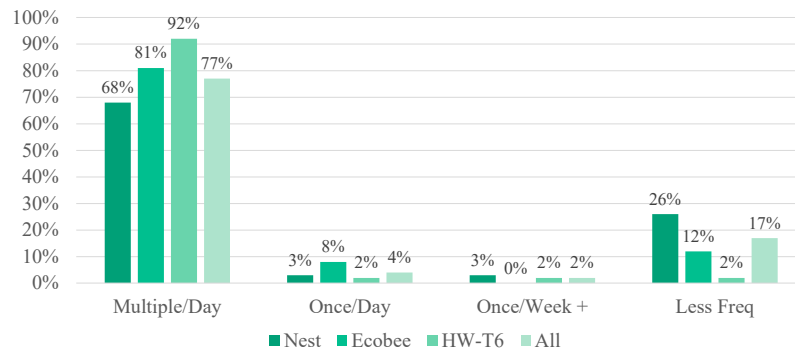
Participant Technology Computer Use



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We asked about computer usage to assess potential ease of use of the smart thermostat technology. While 51% reported that they used a computer multiple times per day, 29% said they used a computer less than once per week.

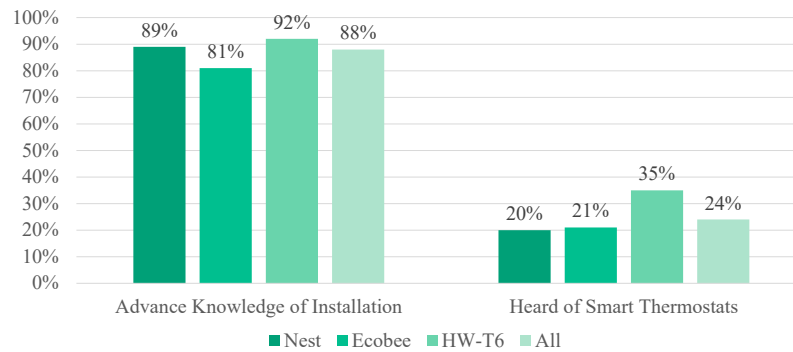
Participant Technology Smart Phone/Tablet Use



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While 77% reported that they used a smart phone or tablet multiple times per day, 17% said they used a smart phone or tablet less than once per week.

Smart Thermostat Knowledge

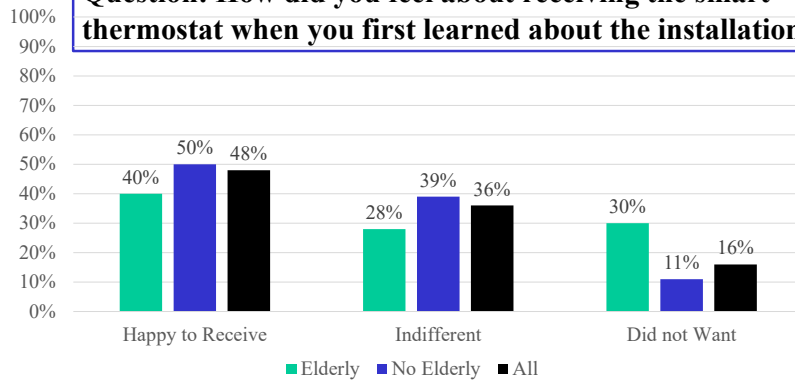


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Participants were informed via mail and building notices that the thermostat would be installed in their unit. 88% said they had advance knowledge of the installation while others said that they found out about the installation when the technician arrived at the home for installation, or when they returned home and saw the door hanger. Only 24% had previously heard of smart thermostats.

Smart Thermostat Attitude

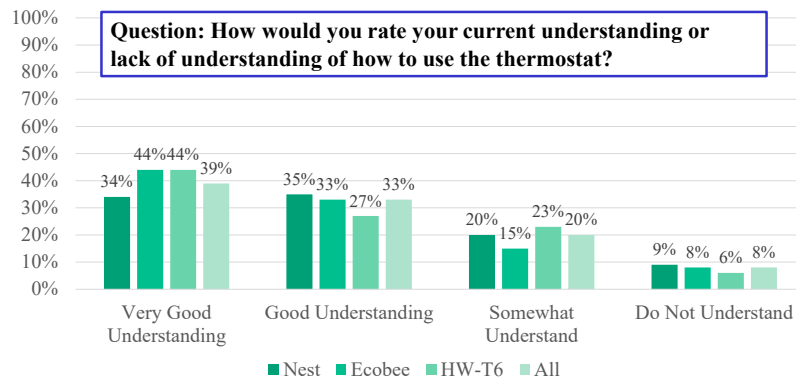
Question: How did you feel about receiving the smart thermostat when you first learned about the installation?



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Overall, 48% said that they were happy to learn that a smart thermostat would be installed in their unit. While 50% of those with no elderly said they were happy to receive a smart thermostat, 40% of those with an elderly household member said they were happy to receive a smart thermostat. While 30% with an elderly member said they did not want a smart thermostat, 11% without an elderly member said they did not want a smart thermostat.

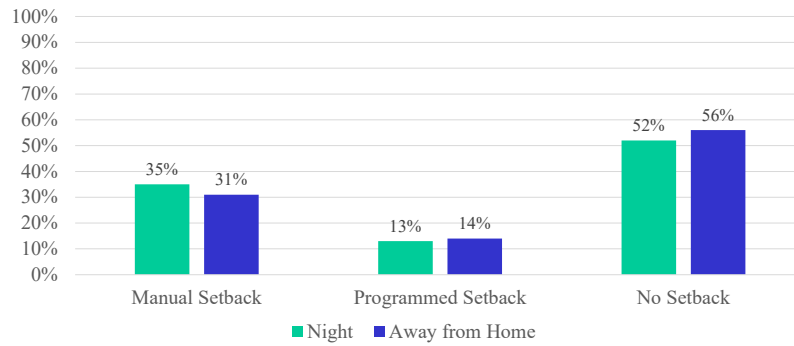
Smart Thermostat Understanding



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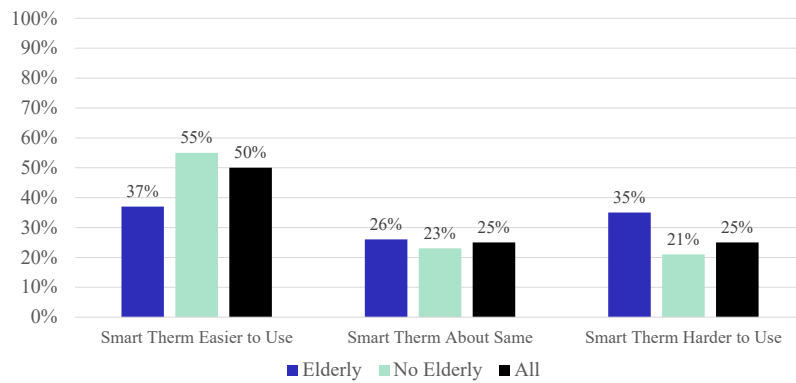
Overall, 72% said they had a very good or good understanding of how to use the smart thermostat, 20% said they somewhat understood how to use the smart thermostat, and 8% said they did not understand how to use the smart thermostat.

Prior Winter Setbacks



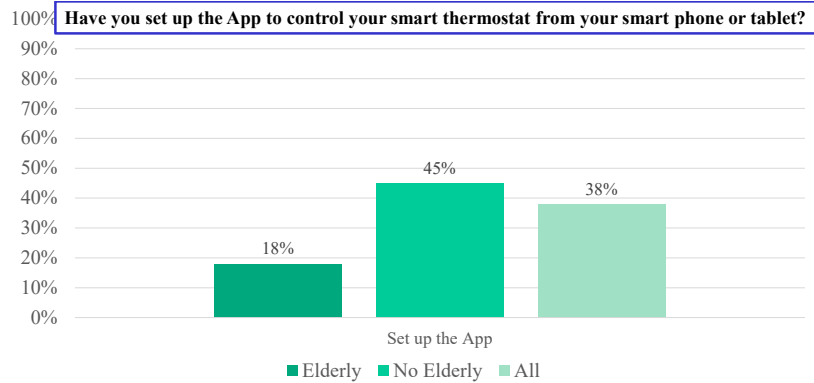
Prior to receiving the smart thermostat, 52% said they did not set back their temperature at night in the winter, and 56% said they did not set back their temperature when no one was home in the winter.

Ease of Use



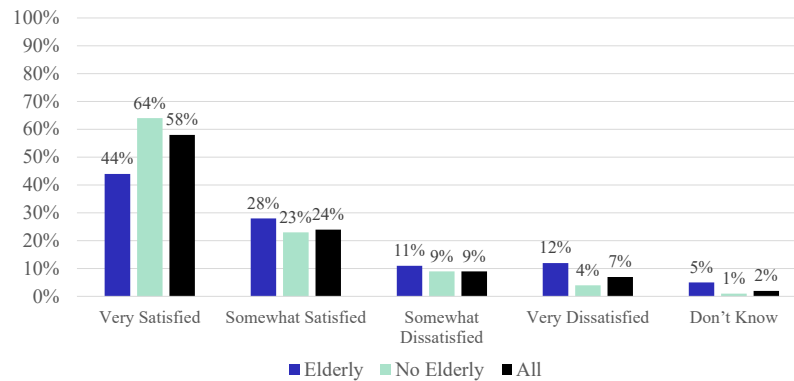
50% said the smart thermostat was easier to use than their previous thermostat, 25% said it was about the same, and 25% said it was harder to use. 35% of the elderly said it was harder to use.

Set up App



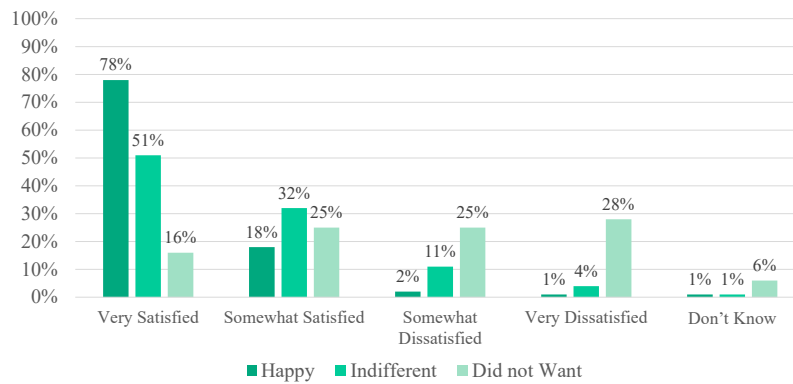
38% said they said up the app to control the smart thermostat from their smart phone or tablet.

Thermostat Satisfaction



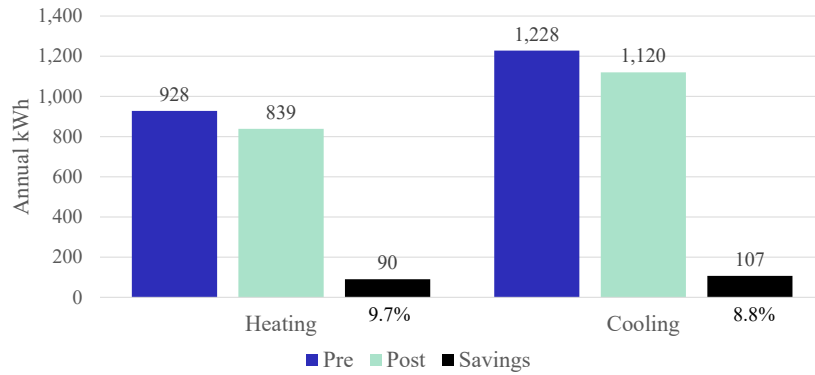
Overall, 58% were very satisfied with the smart thermostat and 24% were somewhat satisfied. While 64% of those without an elderly member were very satisfied, 44% of those with an elderly member were very satisfied.

Thermostat Satisfaction By Initial Attitude



While 78% of those who were initially happy to learn they would receive a smart thermostat were very satisfied with the thermostat, only 16% of those who did not want a smart thermostat were very satisfied with the smart thermostat.

Electric Savings



Average annual electric savings were 9.7% of heating usage and 8.8% of cooling usage.

Key Findings



| | |
|---------------------------|---|
| Energy Saving Opportunity | Pre-installation, majority did not use programmed or manual setback when away. |
| Demographic Impact | Elderly were less receptive and satisfied. |
| Technological Preparation | High likelihood of computer, smart phone, and tablet use. But a minority set up the app. |
| Thermostat Education | Participants took advantage of many opportunities to learn about smart thermostats but still said more education is needed. |
| Thermostat Understanding | Most reported very good or good understanding of the thermostat. |
| Satisfaction | Most were very or somewhat satisfied with the installation crew, temperature settings, thermostat, and program. |