



Opinion **Dynamics**

# AMEREN ILLINOIS INCOME QUALIFIED PARTICIPANT NON-ENERGY IMPACTS ASSESSMENT

OCTOBER 31, 2023



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# I. INTRODUCTION

Opinion Dynamics conducted an evaluation of the participant non-energy impacts (NEIs) resulting from participation in the Ameren Illinois Company (AIC) Income Qualified (IQ) Initiative. The goals of this study were to estimate safety, comfort, and economic metrics for 2021 single family IQ participants who receive HVAC and/or insulation upgrades and to use the metrics to estimate and monetize benefits that result from participation. This report documents the study design and results from the research.

## I.1 INCOME QUALIFIED INITIATIVE DESCRIPTION

The AIC IQ Initiative encompasses nearly all of AIC's low- and moderate-income targeted energy efficiency offerings, including efforts targeted at both single and multifamily customers. The target market for the Initiative is single family customers with household incomes up to 300% of the federal poverty guideline. The IQ Initiative includes a number of distinct channels that provide a variety of services to AIC customers.

For the purposes of this study, we focused on the IQ Initiative's Single Family Core Channel, which provides no-cost Building Performance Institute (BPI) energy audits that identify building shell and HVAC retrofit opportunities. During the audit, implementation staff also install energy-efficient direct install (DI) measures such as showerheads, faucet aerators, advanced power strips, pipe insulation, and advanced thermostats at no cost. Following the audit, customers may also receive additional retrofits, in some cases with a copayment, such as air sealing and insulation improvements, central air conditioner replacements, and air source heat pump replacements. We focused this study specifically on participants who received HVAC and/or insulation upgrades in an income qualified program because the attributable NEIs we are interested in are theoretically associated most strongly with these measures<sup>1</sup> and in this population.<sup>2</sup>

## I.2 NEI BACKGROUND RESEARCH

NEIs are the impacts that an efficiency program has on its participants, the sponsoring utility, and society at large, beyond the energy and demand savings it was designed to produce. Over the past 25 years, NEI researchers and evaluators have been able to qualitatively describe, quantify, and/or monetize the value of numerous NEIs, resulting in a deep and wide-ranging field of research. NEIs typically include environmental, economic, public health, and other effects. Furthermore, because of place-based social inequities that low-income families face, low-income households and disadvantaged communities stand to gain significant improvements in many aspects of life after participating in energy efficiency programs.

The present study built off previous research by Opinion Dynamics that screened for participant economic and health NEIs from the AIC IQ Initiative.<sup>3</sup> Opinion Dynamics surveyed participants from the 2018 program year and gathered descriptions of their health, economic, and housing conditions in the year prior to receiving program upgrades. The results of this early research indicated the Initiative was reaching customers who experienced the types of health, economic, and housing issues we would expect energy efficiency projects to help improve. As a result, we identified a strong potential for this Initiative to provide the participant and societal NEIs the present study aimed to further research.

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<sup>1</sup> Skumatz 2014, Non-Energy Benefits/Non-Energy Impacts and Their Role and Values in Cost-Effectiveness Tests: State of Maryland [https://sahlln.energyefficiencyforall.org/sites/default/files/2014\\_%20NEBs%20report%20for%20Maryland.pdf](https://sahlln.energyefficiencyforall.org/sites/default/files/2014_%20NEBs%20report%20for%20Maryland.pdf)

<sup>2</sup> Oak Ridge National Laboratory, 2014. Health and Household-Related Benefits Attributable to the Weatherization Assistance Program [https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNL\\_TM-2014\\_345.pdf](https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNL_TM-2014_345.pdf)

<sup>3</sup> 2018 Non-Energy Impacts Baseline Assessment. <https://www.ilsag.info/wp-content/uploads/AIC-2018-NEI-Baseline-Assessment-Memo-FINAL-2020-02-10.pdf>

## 2. STUDY DESIGN AND METHODS

To conduct this study, we used a quasi-experimental design that compared the change in a treatment group to the change in a comparison group between two points in time. The treatment group consisted of AIC IQ participants who received HVAC and/or insulation upgrades in the 2021 program year through the Single Family Core Channel; the comparison group consisted of AIC IQ participants who received HVAC and/or insulation upgrades through the Single Family Core Channel in the 2019 program year (Table 1).

Table 1. AIC IQ Initiative Participant NEI Study Design

Group	Definition	Pre-Period Survey	Post-Period Survey
Treatment	2021 participants who received HVAC and/or insulation upgrades	<ul style="list-style-type: none"> <li>Gathered self-reported health, safety, comfort, and economic metrics in the past 12 months</li> </ul>	<ul style="list-style-type: none"> <li>Gathered self-reported health, safety, comfort, and economic metrics post-treatment</li> </ul>
Comparison	2019 participants who previously received HVAC and/or insulation upgrades	<ul style="list-style-type: none"> <li>Fielded survey in 2021, using four waves to reach treatment group within 3 months of participation</li> </ul>	<ul style="list-style-type: none"> <li>Fielded survey in 2022, using four waves to reach respondents about 12 months after pre-period survey</li> </ul>

We designed the survey such that both groups would be surveyed twice: (1) before the treatment group participants received insulation and HVAC upgrades (pre-period) and (2) approximately one year later (post-period). In other words, the design called for surveying the treatment group before participation and one year after, while surveying the comparison group approximately two years after participation and then one year later (i.e., about three years after participation). The change in the comparison group provided an assessment of how conditions may have changed due to exogenous factors. By comparing the change in the treatment group to the change in the comparison group, we isolated the effects of participation on respondents' overall health and economic well-being.

While typical experimental designs in energy efficiency evaluation research often utilize a comparison group of either nonparticipants or future participants, we opted to use prior participants for several reasons. First, given the Initiative design it was impossible to identify and survey future participants at the same time as treatment group participants. We considered using a nonparticipant comparison group consisting of AIC customers who meet the income eligibility requirements, but who had not participated in the Initiative. This would have created a self-selection bias, however, as those who participate in the Initiative are likely different from those who do not participate in ways that would affect the metrics of interest. In contrast, using a group of prior participants increased the likelihood that the treatment and comparison groups would have similar characteristics. Additionally, this methodology is supported by the literature and was used in a previous NEI assessment of a low-income weatherization program.<sup>4</sup> As noted by the study authors, a potential limitation of this design is that it may underestimate the influence of exogenous factors, because the comparison group has already participated in the program and therefore may be less affected by exogenous factors compared to the treatment group.

Surveys were designed to provide insights regarding the following topics:

- **Screening:** Did respondents live in the residence where the IQ Initiative work was completed (and have they been there for at least one year)? Did respondents remember participating in the Initiative during the timeframe on file?
- **Demographics:** What types of respondents participated in the Initiative, in terms of household income, home characteristics, homeownership, and other key demographics?

<sup>4</sup> APPRISE. *National Weatherization Assistance Program Evaluation: Analysis Report, Non-Energy Benefits of WAP Estimated with the Client Longitudinal Survey Final Report*. January 2018. <http://www.appriseinc.org/wp-content/uploads/2018/02/WAP-Non-Energy-Benefits-Analysis-Report.pdf>.

- **Economic and Energy Security:** To what extent did respondents have a concern or show a struggle in paying energy bills? What strategies did respondents report taking to pay various household bills?
- **Health and Safety:** What were the building safety and indoor conditions like in participant homes? What level does the respondent report their physical and mental health to be?

## 2.1 ANALYSIS PLAN

We used the pre-period survey to compare the characteristics of the treatment group before participation and the comparison group after participation. This allowed us to assess the initial difference between the two groups and evaluate the impact of the Initiative and those findings were shared in a previous memo.<sup>5</sup> In this study, we estimated the impacts of IQ participation using a difference-in-difference approach as seen in Equation 1.

Equation 1. Difference-in-Difference Equation for Changes in NEI Metrics

$$\text{Change in NEI Metric Due to Initiative} = (\text{Treatment}_{\text{Post}} - \text{Treatment}_{\text{Pre}}) - (\text{Comparison}_{\text{Post}} - \text{Comparison}_{\text{Pre}})$$

For all survey questions, we reported both the pre-post change in the treatment and comparison groups, and the difference in the changes. The Initiative impact is represented by the net change or the difference in the change across the treatment and comparison groups. We further indicated the statistical significance in the change in the treatment and comparison group and the net change. Though we reported all changes, not only those that were statistically significant, we only monetized benefits or qualitatively assessed benefits for which we had robust data sources and that were statistically significant.

## 2.2 PRE-PERIOD SURVEY FIELDING

Beginning in April 2021, Opinion Dynamics conducted a survey with previous AIC IQ Initiative participants who were invited by email, phone, and/or mail to complete the survey through either a web-based or telephone option. We surveyed AIC IQ Initiative participants from (1) the 2021 Single Family Core Channel within three months of receiving HVAC or insulation upgrades (the treatment group), and (2) the 2019 Single Family Core Channel around two years after receiving HVAC or insulation upgrades (the comparison group).

## 2.3 POST-PERIOD SURVEY FIELDING

Beginning in April 2022, Opinion Dynamics conducted another survey with previous AIC IQ Initiative participants who successfully completed a pre-period survey. These participants were invited by email, phone, and/or mail to complete the survey through either a web-based or telephone option. We surveyed AIC IQ Initiative participants from (1) the 2021 Single Family Core Channel around a year after receiving HVAC or insulation upgrades (the treatment group), and (2) the 2019 Single Family Core Channel around three years after receiving HVAC or insulation upgrades (the comparison group).

<sup>5</sup> AIC IQ Participant NEI Study Design, Pre-Period Results and Updates Memorandum; Submitted by Opinion Dynamics on June 06, 2022.  
Opinion Dynamics

### 3. RESULTS

The pre-period and post-period surveys were both fielded in four waves and were collected primarily as a web survey; however, respondents could, alternatively, call-in to complete the survey over the telephone. Participants were contacted up to four times to attempt to recruit their participation in the survey. Those with an email on file received (1) an emailed survey invitation, (2) a mailed postcard reminder, and (3) an email reminder; while those without email addresses on file received (1) a mailed survey invitation letter, (2) a mailed postcard reminder, (3) a second mailed postcard reminder, and (4) a phone call. We offered a \$10 gift card for completing the pre-period survey and offered a \$75 gift card for completing the post-period survey.

#### 3.1 PRE-PERIOD SURVEY

In April 2021, we launched the first wave of the pre-period survey; the next waves were launched in July 2021, October 2021, and January 2022. See Table 2 for the fielding results.

Table 2. Treatment and Comparison Group Pre-Period Survey Completes by Wave

Survey Wave	Treatment Group	Comparison Group	Response Rates
Wave 1	75	42	28%
Wave 2	49	91	24%
Wave 3	22	20	19%
Wave 4	59	46	27%
<b>Total</b>	<b>205</b>	<b>199</b>	<b>25%</b>

#### 3.2 POST-PERIOD SURVEY

In April 2022, we launched the first wave of the post-period survey; the next waves were launched in July 2022, October 2022, and January 2023. See Table 3 for the fielding results.

Table 3. Treatment and Comparison Group Post-Period Survey Completes by Wave

Survey Wave	Treatment Group	Comparison Group	Response Rates
Wave 1	29	17	50%
Wave 2	28	38	60%
Wave 3	12	9	60%
Wave 4	37	16	61%
<b>Total</b>	<b>106</b>	<b>80</b>	<b>56%</b>

In the subsections that follow, we discuss overall results of the pre- and post-period survey findings for those that responded to both the pre- and post-survey. For a topline of full survey results, please refer to Appendix A.

#### 3.3 DEMOGRAPHICS

Among the respondents of both the pre-period survey and the post-period survey, about two-thirds (63%) were considered low-income according to AIC's income eligibility requirements and about one-third (35%) were in the moderate-income category. Few respondents (2%) did not have accompanying income information for classification as provided by AIC. Additionally, most (95%) survey respondents reported owning their home, with no statistical difference between treatment and comparison groups or between pre- and post-period surveys.



Though there were multiple significant differences between household members' employment statuses across the pre- and post-periods, the net differences between treatment and comparison groups were not statistically significant for any status. Most respondents had at least one member of the household who was employed full-time during the past month at the time they responded to the survey (45% in the pre-period; 58% in the post-period; Table 4). There was, however, an increase in the amount of household members who were retired (45%), part-time employed (42%), or homemakers (26%) in the post-period compared to pre-period (36%, 19%, and 13%, respectively).

Table 4. Employment Status of Respondents

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Employed full-time	45%	57%	11%*	45%	60%	15%*	-4%
Retired	29%	44%	15%*	33%	46%	14%*	2%
Employed part-time	21%	44%	24%*	20%	39%	19%*	5%
Homemaker	9%	26%	17%*	10%	25%	15%*	2%
In school or college and not working	9%	34%	25%*	10%	34%	24%*	1%
Not employed, but actively looking	9%	23%	14%*	10%	29%	19%*	-5%
Self-employed	10%	29%	19%*	5%	28%	23%*	-4%
Not employed, and not looking	8%	27%	19%*	4%	24%	20%*	-1%
Furloughed due to COVID-19	2%	21%	19%*	5%	21%	16%*	3%
Disability	7%	0%	-7%*	4%	0%	-4%*	-3%

Note: The total column sums to over 100% as respondents classified the employment status for each household member aged 17 and older. Also, in line with Equation 1, the "Change" fields show the difference between the pre- and post-survey responses (a negative number indicates a decrease in the post-period compared to the pre-period; the "Net Difference" field shows the difference-in-difference between the treatment and comparison groups (a negative number indicates a net decrease in the treatment group's responses across periods compared to the comparison group).

\*Significant difference at the  $p < 0.10$  level.

## 3.4 STATISTICALLY SIGNIFICANT DIFFERENCES

After determining the treatment and comparison groups to be comparable across demographics, we examined the statistically significant differences across the groups' economic and energy security assessments and health and safety assessments. We found significant differences in outcomes across the treatment and control groups between the pre-period and post-period for three survey questions:

- Draftiness of the home; and
- Home temperature comfort during the winter;
- Usage of medical payment assistance.

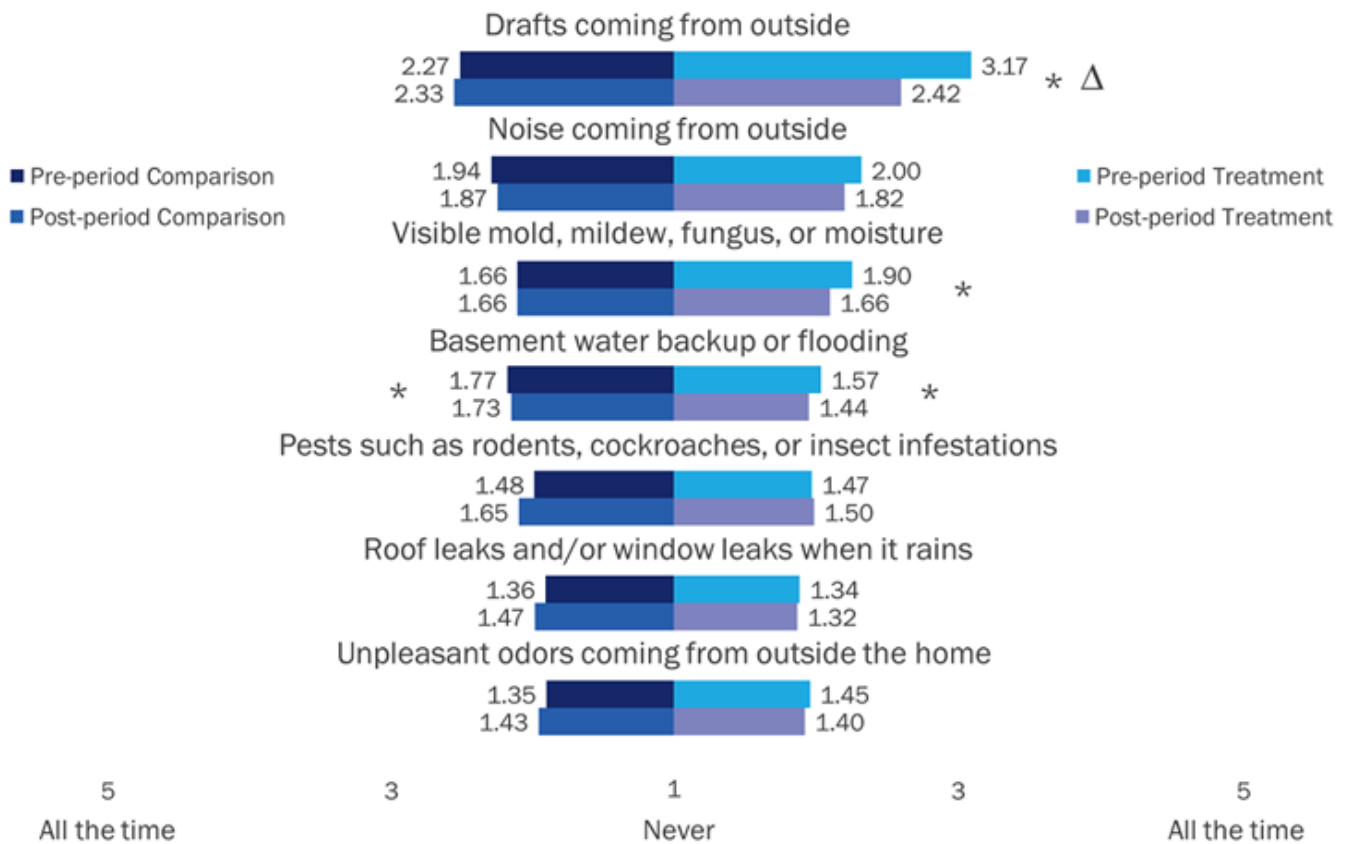
### 3.4.1 INDOOR CONDITIONS

The interim findings of the pre-period survey found that treatment group respondents had more health, comfort, and safety incidents than comparison group respondents. Treatment group respondents, for example, had experienced significantly more drafts, and more visible mold, mildew, fungus, or moisture compared to the comparison group respondents.

In the pre-post comparison, treatment group respondents reported significantly fewer incidences of drafts, fewer incidences of visible mold, mildew, fungus, or moisture, and fewer incidences of basement water backup in the post-period compared to the pre-period. Comparison group respondents only reported significantly fewer incidences of basement water backup in the post-period compared to the pre-period. The only significant difference across groups,

however, was the decrease in the amount treatment group respondents experienced drafts coming from outside (Figure 1).

Figure 1. Typical Experience Inside Homes during the Past Year



Note: Respondents were asked to indicate how often they experienced each incident inside the home using a scale of 1 to 5, with 1 representing “Never” and 5 representing “All the Time”) There were 80 respondents in the comparison group and 106 respondents in the treatment group who provided responses to this question.

\* Significant difference across pre- and post-period at the  $p < 0.10$  level

Δ Significant difference-in-difference across treatment and comparison groups at the  $p < 0.10$  level

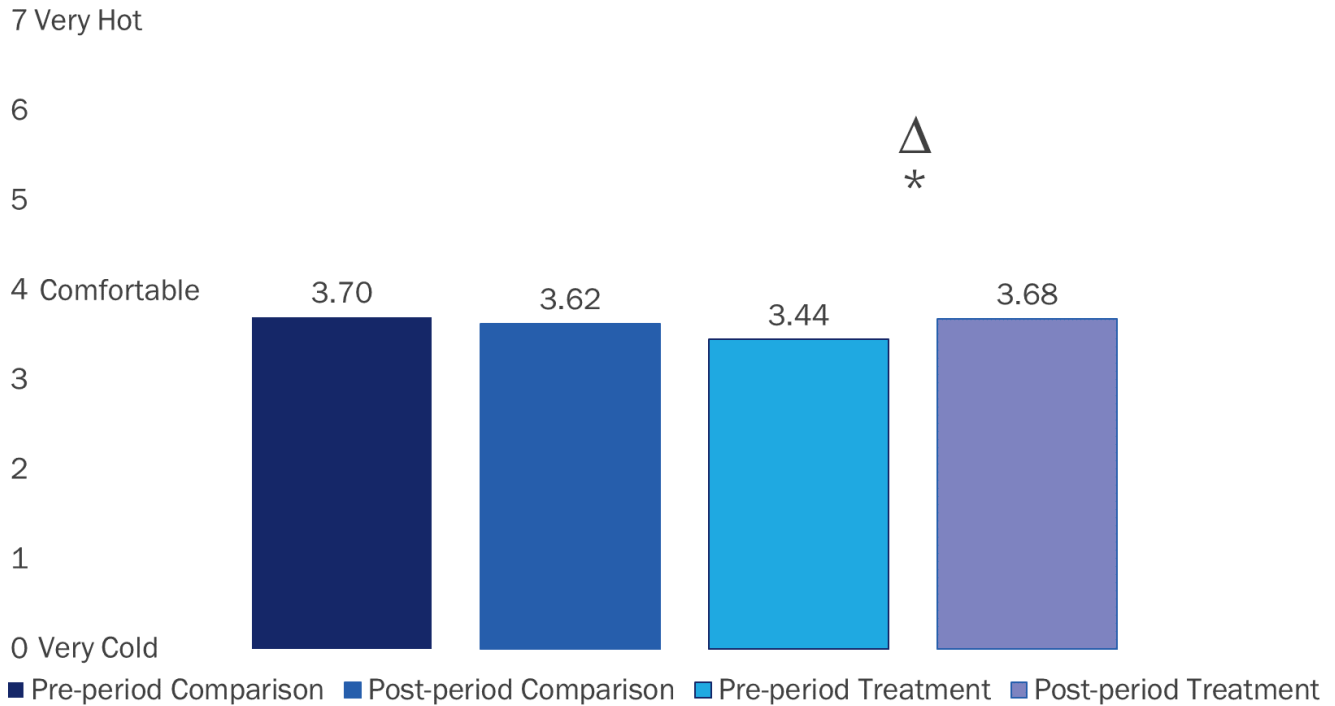
### 3.4.2 HOME TEMPERATURE AND THERMAL STRESS

Pre-period treatment group respondents reported that typical indoor temperature of their home was less comfortable than comparison group respondents; on average, treatment group respondents were hotter during the past summer and colder during the past winter while comparison group respondents were more comfortable during both seasons.

In the pre-post comparison, treatment group respondents reported that the typical indoor temperature of the home was significantly more comfortable in the winter during the post-period than had been in the pre-period. Furthermore, treatment group respondents showed a significantly larger increase in home temperature comfort during the winter in the post-period than did comparison group respondents (Figure 2).



Figure 2. Typical Indoor Home Temperature During the Past Winter



Note: Respondents were asked to rate the home temperature of the home on a scale of 1 to 7, where 1 indicated “Very Cold,” 4 represented “Comfortable,” and 7 represented “Very Hot.” Respondents who were “Not sure” or who “Preferred to not answer” were removed from this analysis. There were 80 respondents in the comparison group and 103 respondents in the treatment group who provided responses to this question.

\* Significant difference across pre- and post-period at the  $p < 0.10$  level

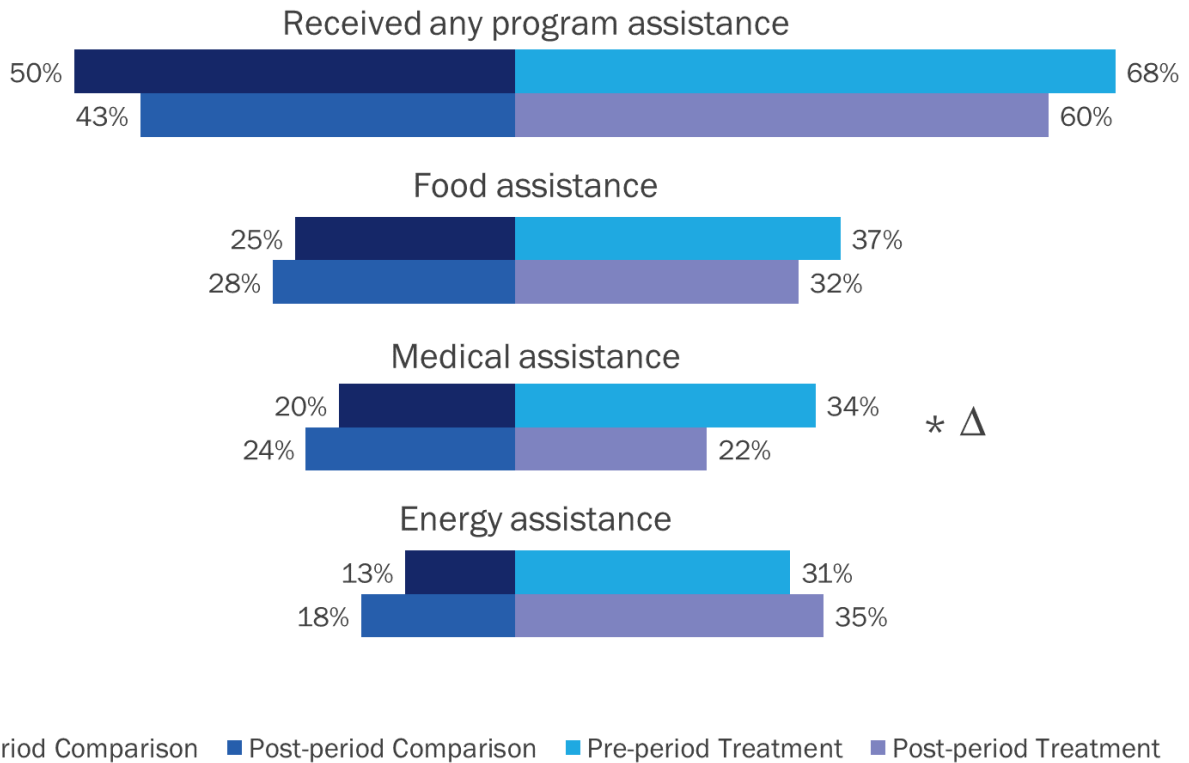
Δ Significant difference-in-difference across treatment and comparison groups at the  $p < 0.10$  level

### 3.4.3 BILL PAYMENT ASSISTANCE

Pre-period comparison group respondents were less likely to receive payment assistance from public assistance programs compared to treatment group respondents, while treatment group respondents were more likely to receive food, medical, or energy payment assistance than the comparison group. Very few respondents from either group used pandemic-related, financial, general housing, childcare, or other types of payment assistance.

In the pre-post comparison, we found that treatment group respondents used medical payment assistance significantly less in the post-period than in the pre-period. Furthermore, treatment group respondents showed a significantly larger decrease in the use of medical payment assistance in the post-period than did comparison group respondents (Figure 3).

Figure 3. Payment Assistance Programs Households Received in the Past Year



Note: Respondents who were “Not sure” or who “Preferred to not answer” were removed from this analysis. There were 80 respondents in the comparison group and 106 respondents in the treatment group who provided responses to this question.

\* Significant difference across pre- and post-period at the  $p < 0.10$  level

Δ Significant difference-in-difference across treatment and comparison groups at the  $p < 0.10$  level

## 3.5 MONETIZATION

After finding significant differences in outcomes across the treatment and control groups between the pre-period and post-period for draftiness of the home, home temperature comfort during the winter, and usage of medical payment assistance, we explored monetization of these differences using two values:

- The value of avoided medical attention due to thermal stress (a participant NEI), and
- The value of avoided medical payment assistance use (a societal NEI).

The sections that follow walk through the NEI monetization approach and valuation for these specific metrics.

### 3.5.1 AVOIDED MEDICAL ATTENTION DUE TO THERMAL STRESS

In this study, we found significantly fewer drafty conditions within the home during the post-period than had been reported in the pre-period for treatment respondents. We also found that the typical indoor temperature of the home was significantly more comfortable (less cold) in the winter during the post-period than had been in the pre-period for treatment respondents. This provided a qualitative assessment of the improvement in indoor home conditions; HVAC upgrades and/or increased home weatherization led to fewer drafts and warmer indoor winter temperatures.

Following the question regarding winter thermal stress, we further asked respondents in both the pre-period survey and the post-period survey to report the number of medical visits that each member of their household took in the past winter. Specifically, we inquired about urgent care clinic/doctor’s office visits, emergency room visits, and hospital stay visits due to the cold temperature in the home during the past winter. These questions were designed to provide a quantifiable measure for the share of respondents who reported reductions in medical visits due to a colder indoor temperature. Treatment group respondents, however, did not experience a significant change in the number of medical visits that household members took in the past winter across the pre- and post-periods. Similarly, the difference-in-difference between the treatment group and comparison group was not significant.

To monetize the value of needing fewer medical visits due to thermal stress in alignment with similar industry studies,<sup>6</sup> there would need to be a statistically significant change in the share of respondents that reported reductions in household medical visits due to winter thermal stress. Thus, the value of avoided medical attention due to thermal stress could only be qualitatively assessed. Although this study demonstrates that the Initiative provided a reduced thermal stress NEI, it does not provide sufficient empirical evidence that this particular NEI has a monetizable value associated with it.

### 3.5.2 AVOIDED MEDICAL PAYMENT ASSISTANCE USE

In this study, we found that treatment group respondents used medical payment assistance significantly less in the post-period than in the pre-period compared to comparison group respondents. We further inquired about the number of household members residing in the home during both the pre-period and post-period. This provided a quantifiable measure for the share of respondents who reported reductions in medical payment assistance.

To monetize the value of avoided medical payment assistance use, Opinion Dynamics calculated the average value of medical payment assistance that qualified households received in the pre- and post-periods (Equation 2), in alignment with similar industry studies.<sup>7 8</sup>

Equation 2. Average Value of Medical Payment Assistance for Qualified Households in Pre- and Post-Periods

$$Avg\ Medical\ Benefits_{period} = (Avg\ Spending_{NoMC} - Avg\ Spending_{MC}) \times Avg\ Household\ Size_{period}$$

Where:

*Avg Spending<sub>NoMC</sub>* – total out of pocket medical expenses for households without Medicaid or Medicare

*Avg Spending<sub>MC</sub>* – total out of pocket medical expenses for households with Medicaid or Medicare

*Avg Household Size* – average number of members living in the home the majority of the time

<sup>6</sup> New Hampshire Utilities Home Energy Assistance Program Evaluation Report 2016-2017; Submitted July 29, 2020. Opinion Dynamics researched the NEIs associated with the NHSaves Program. The program provides a comprehensive home energy assessment, weatherization measures, and energy-saving measures to help income-eligible New Hampshire residents reduce energy costs and realize other NEIs. <https://www.puc.nh.gov/electric/Monitoring%20and%20Evaluation%20Reports/20200729-NHSaves-HEA-Evaluation-Report-FINAL.pdf>

<sup>7</sup> Ameren Illinois Company Low Income Needs Assessment Final Report, June 1, 2022. Opinion Dynamics conducted a general population survey with a representative sample of AIC residential customers. As part of that work, we accounted for the NEI of the value of medical payment assistance needed to support qualified households’ medical visits. <https://www.ilsag.info/wp-content/uploads/AIC-2021-LINA-Report-FINAL-2022-06-01.pdf>

<sup>8</sup> Tonn, B., Rose, E., Hawkins, B., & Conlon, B. (2014). Health and household-related benefits attributable to the weatherization assistance program. ORNL/TM-2014/345, Oak Ridge National Laboratory, Oak Ridge, Tennessee, September. [https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNLTM-2014\\_345.pdf](https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNLTM-2014_345.pdf)

To determine the total public medical payment assistance received by households in the pre- and post-periods, we multiplied the average value of assistance received by eligible households during each period by the total number of participating households who received the appropriate measures in 2021 ( $N$ ; Equation 3).

Equation 3. Total Value of Possible Medical Payment Assistance for Qualified Households in Pre- and Post-Periods

$$Total\ Possible\ Medical\ Benefits_{period} = Avg\ Medical\ Benefits_{period} \times N$$

To determine the total value of public medical payment assistance that households used in the pre- and post-periods, we multiplied the total value of public medical payment assistance that households may have received by the percentage of respondents who reported the usage of medical payment assistance ( $\%HH_{MPA}$ ; Equation 4).

Equation 4. Total Value of Used Medical Payment Assistance for Qualified Households in Pre and Post Periods

$$Total\ Used\ Medical\ Benefits_{period} = Total\ Possible\ Medical\ Benefits_{period} \times \%HH_{MPA}$$

Finally, we calculated the societal NEI of unused medical payment assistance by subtracting the total used medical benefits in the post-period from the total used medical benefits in the pre-period (Equation 5). We also calculated the per-participating household value by dividing the total used medical benefits by the total number of 2021 participating households who received the appropriate measures (Equation 6).

Equation 5. Monetization of Unused Medical Payment Assistance NEIs

$$Medical\ Payment\ Assistance\ NEI_{total} = Total\ Used\ Medical\ Benefits_{pre-period} - Total\ Used\ Medical\ Benefits_{post-period}$$

Equation 6. Monetization of Used Medical Payment Assistance Per Household

$$Medical\ Payment\ Assistance\ NEI_{per\ household} = \frac{Medical\ Payment\ Assistance\ NEI_{total}}{N}$$

Using secondary research and findings from the average total out of pocket medical expense information<sup>9</sup> along with findings from the pre- and post-period survey regarding the usage of medical payment assistance and household size, we determined the following values to support the calculation of societal medical payment assistance NEIs for the program (Table 5).

Table 5. Monetization of Medical Payment Assistance NEI Values

Variables	Pre-Period Values	Post-Period Values
<i>Avg Spending<sub>NoMC</sub></i>	\$765.68	\$765.68
<i>Avg Spending<sub>MC</sub></i>	\$721.90	\$721.90
<i>Avg Household Size<sub>period</sub></i>	2.90	2.83
<i>Avg Medical Benefits<sub>period</sub></i>	\$126.96	\$123.90
<i>N</i>	2,013	2,013
<i>Total Possible Medical Benefits<sub>period</sub></i>	\$255,574.51	\$249,405.47
<i>%HH<sub>MPA</sub></i>	34%	22%
<i>Total Used Medical Benefits<sub>period</sub></i>	\$86,895.33	\$54,120.99
Medical Payment Assistance NEI <sub>total</sub>	\$32,774.35	
Medical Payment Assistance NEI <sub>per household</sub>	\$16.28	

<sup>9</sup> 2020 Medical Expenditure Panel Survey (MEPS). This public use file provides information and averages collected on a nationally representative sample of the civilian noninstitutionalized population of the United States. Values would be in terms of 2020 estimates.

## 4. CONCLUSIONS AND RECOMMENDATIONS

Opinion Dynamics conducted an evaluation of the participant NEIs resulting from participation in the AIC IQ Initiative. The goals of this study were to estimate safety, comfort, and economic metrics for 2021 single family IQ participants who receive HVAC and/or insulation upgrades and to use the metrics to estimate and monetize benefits that result from participation. We used a quasi-experimental design that compared the change in a treatment group to the change in a comparison group between two points in time. While the treatment group consisted of AIC IQ participants who received HVAC and/or insulation upgrades in the 2021 program year through the Single Family Core Channel, the comparison group consisted of AIC IQ participants who received HVAC and/or insulation upgrades through the Single Family Core Channel in the 2019 program year.

We surveyed each group twice: once right before the treatment group participants received insulation and HVAC upgrades (pre-period) and then a second time approximately one year after the treatment group participants received insulation and HVAC upgrades (post-period). Though we reported all changes and differences across groups, including those that are not statistically significant, we only monetized and/or qualitatively assessed benefits for which we had robust data sources and that were statistically significant.

Our research identified significant differences in outcomes across the treatment and control groups between the pre-period and post-period for the draftiness of the home, home temperature comfort during the winter, and usage of medical payment assistance. While we were unable to monetize the economic value of reduced thermal stress resulting from participation in the Initiative, we found a monetizable value of avoided medical payment assistance use. We found that through avoided medical payment assistance use, participants saved \$16.28, on average, equating to a program-level, societal NEI savings of \$32,774.35. These estimates are in line with other research that estimated income-qualified weatherization participants save between \$3.02 and \$100.50 (\$16.50 on average) in response to health and safety improvements.<sup>10</sup>

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<sup>10</sup> Skumatz 2014, Non-Energy Benefits/Non-Energy Impacts and Their Role and Values in Cost-Effectiveness Tests: State of Maryland. In this study, Health and Safety benefits were classified as participant NEIs. Further, participant NEIs were defined as “incremental non-energy effects from initiatives that affect those using the energy efficient equipment, beyond energy or bill savings” and included components such as the ability to pay bills (energy and non-energy bills).

[https://sahlln.energyefficiencyforall.org/sites/default/files/2014\\_%20NEBs%20report%20for%20Maryland.pdf](https://sahlln.energyefficiencyforall.org/sites/default/files/2014_%20NEBs%20report%20for%20Maryland.pdf)

## APPENDIX A. TOPLINE OF SURVEY RESULTS

Below are the detailed survey responses of the pre- and post-period surveys. Please note that some questions are "multiple response" and do not sum to 100%. In some cases, the percentages do not sum to 100% due to rounding.

### SCREENING

S1. The service address on your Ameren Illinois account is [ADDRESS]. Do you live at this address?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	100%	100%	0%	100%	100%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: Any respondents answering "No" were terminated.

S1a. How long have you lived at this residence?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
More than 1 year	100%	23%	-77%	100%	33%	-68%	-10%
Less than 1 year	0%	77%	77%	0%	68%	68%	10%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: Any respondents answering "Less than 1 year" or "Not sure" were terminated.

S1b. Did you live at this residence for at least 6 of the last 12 months?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	100%	99%	-1%	100%	100%	0%	-1%
No	0%	1%	1%	0%	0%	0%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: Any respondents answering "No" were terminated.

### SURVEY BODY

S4. We have questions about your household's energy use, household members' health, and if anyone in the household has missed days of school or work due to health issues. Are you the most knowledgeable person in the household to speak to these topics?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	99%	100%	1%	100%	100%	0%	1%
No	1%	0%	-1%	0%	0%	0%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: Any respondents answering "No" were asked to put the correct household member on the phone.



S7. How many people in each of the following age categories lived in your home at least 6 months of the last 12 months, including yourself? For example, please do not include individuals who are away at college or in military service for most of the year.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Under 13 (Mean)	0.87	0.92	0.05	0.26	0.26	0.00	0.05
14 to 17 (Mean)	0.20	0.19	-0.01	0.16	0.14	-0.02	0.01
18 to 64 (Mean)	1.33	1.39	0.06	1.30	1.26	-0.04	0.10
65 to 84 (Mean)	0.38	0.37	-0.01	0.44	0.50	0.06	-0.07
Over 84 (Mean)	0.00	0.01	0.01	0.04	0.04	0.00	0.01

Note: Any respondents answering “Not sure” or “Prefer not to say” were terminated. Also, this was a multiple response question.

S7a. How many individuals in the household are currently in Kindergarten through 12th grade?

Response	Treatment Group (n=87)			Compare Group (n=59)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
0	51%	48%	-2%	73%	73%	0%	-2%
1-4	48%	51%	2%	25%	25%	0%	2%
5 or more	1%	1%	0%	2%	2%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered that they have any persons under the age group 65 in the household (S7).

S2. Do you or members of your household own or rent the residence at [ADDRESS]?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Own	95%	95%	0%	98%	98%	0%	0%
Rent or lease	5%	5%	0%	3%	3%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

## ENERGY BILLS

B1. Do you pay your own electric bill?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Pay your own electric bill	100%	100%	0%	100%	100%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

B2. Do you pay your own gas bill?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Pay your own gas bill	99%	99%	0%	100%	100%	0%	0%
Not applicable	1%	1%	0%	0%	0%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

B3. During the last 12 months, how did your household pay for the basic things you needed, like food, energy bills, housing, or other expenses? Please check all that apply.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Cutting back on spending for household wants, not needs	46%	47%	1%	43%	51%	9%	-8%
Spending wages, tips, and income from paid work or jobs	47%	49%	2%	50%	51%	1%	1%
Using a government stimulus check (COVID-19)	40%	25%	-15%*	43%	28%	-15%*	0%
Using cash payments (unemployment, retirement, etc.)	33%	39%	6%	35%	39%	4%	2%
Reducing your household's energy usage to lower bills	36%	45%	9%*	38%	43%	5%	4%
Cutting back on spending for things your household needs	23%	26%	4%	28%	34%	6%	-2%
Using assistance from a public program for needs	25%	26%	1%	16%	24%	8%	-7%
Using a credit card you don't have to pay off right away	23%	21%	-2%	10%	14%	4%	-6%
Using savings that you had put aside for other things	20%	21%	1%	11%	15%	4%	-3%
Leaving bills unpaid past their due date	13%	17%	4%	8%	14%	6%	-2%
Borrowing money from family or friends	11%	13%	2%	4%	11%	8%*	-6%
Taking out a loan from a bank/credit union	2%	1%	-1%	0%	1%	1%	-2%
Taking out a payday loan	1%	0%	-1%	0%	0%	0%	-1%
Something else	1%	0%	-1%	1%	0%	-1%	0%
None of the above	4%	0%	-4%	3%	3%	0%	-4%
Not sure/Prefer not to say	4%	2%	-2%	1%	0%	-1%	-1%

Note: This was a multiple response question.

\*Significant difference at the  $p < 0.10$  level.

B5. What types of programs provided your household with assistance in the last 12 months? Please select all that apply.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
My household did not receive program assistance in the last 12 months.	32%	40%	8%	50%	58%	8%	0%
Food assistance	37%	32%	-5%	25%	28%	3%	-7%
Medical assistance	34%	22%	-12%*	20%	24%	4%	-16%*
Energy assistance	31%	35%	4%	13%	18%	5%	-1%
Assistance programs associated with COVID-19	1%	1%	0%	6%	1%	-5%*	5%
Financial assistance	3%	5%	2%	3%	1%	-1%	3%
Housing assistance	3%	2%	-1%	0%	1%	1%	-2%
Childcare assistance	0%	1%	1%	0%	1%	1%	0%
Other	3%	0%	-3%*	0%	3%	3%*	-5%
Not sure/Prefer not to say	9%	7%	-3%*	9%	1%	-8%*	5%

Note: This was a multiple response question.

\*Significant difference at the  $p < 0.10$  level.

B6. Which types of food assistance programs provided your household with assistance in the last 12 months?

Response	Treatment Group (n=39, 34)			Compare Group (n=20, 22)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Supplemental Nutrition Assistance Program (SNAP)	90%	91%	1%	85%	100%	15%*	-14%
Food pantries/food banks	28%	29%	1%	30%	41%	11%	-10%
School Lunch Program	21%	24%	3%	30%	23%	-7%	10%
Women-Infant-Children Food Program (WIC)	13%	18%	5%	0%	5%	5%	0%

Note: This was a multiple response question. Also, it was only asked of those who said "Food assistance" in B5.

\*Significant difference at the p<0.10 level.

B7. Thinking specifically about your energy bills and other things you needed to pay for during the past year, how many months out of the last 12 months was your household in each of the following situations?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Paying the energy bill was a struggle (Mean)	4.39	4.30	-0.09	3.26	3.82	0.56	-0.65
Paying medical bills was a struggle (Mean)	3.38	3.02	-0.36	2.80	3.53	0.73	-1.09
Paying for food was a struggle (Mean)	3.64	4.21	0.57	2.63	4.16	1.53*	-0.96
Paying rent or the mortgage was a struggle (Mean)	3.28	2.63	-0.65	1.31	1.97	0.66	-1.31
Not sure/Prefer not to say	28%	21%	-8%	24%	21%	-3%	-5%

\*Significant difference at the p<0.10 level.

B8. At any point in the last 12 months, did you have an unpaid balance with Ameren Illinois?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	24%	26%	3%	15%	16%	1%	2%
No	71%	71%	0%	84%	83%	-1%	1%
Not sure	6%	3%	-3%	1%	1%	0%	-3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

B9. In the last 12 months, was the electric or gas service disconnected at your home because the bill was overdue?

Response	Treatment Group (n=31)			Compare Group (n=13)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	3%	0%	-3%	0%	7%	7%	-10%
No	94%	97%	3%	100%	93%	-7%	10%
Not sure	3%	3%	0%	0%	0%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered "Yes" or "Not sure" in B8.

# HEALTH

## GENERAL CHARACTERIZATION

H1. In the last 12 months, about how often did you experience any of the following inside your home?

- 1 meaning “Never”
- 2 meaning “A few times”
- 3 meaning “Some of the time”
- 4 meaning “Most of the time”
- 5 meaning “All the time”

H1a. Drafts coming from outside.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	3.17	2.42	-0.75*	2.27	2.33	0.06	-0.81*
Standard Deviation (SD)	1.27	1.37	0.10	1.17	1.19	0.03	0.08
Not sure/ Not applicable	5%	2%	-3%	4%	3%	-1%	-2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the  $p < 0.10$  level.

H1b. Visible mold, mildew, fungus, or moisture.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	1.90	1.66	-0.24*	1.66	1.66	0.00	-0.24
Standard Deviation (SD)	1.24	1.07	-0.16	1.15	1.10	-0.05	-0.12
Not sure/ Not applicable	6%	5%	-1%	5%	8%	3%	-4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the  $p < 0.10$  level.

H1c. Pests such as rodents, cockroaches, or insect infestations.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	1.47	1.50	0.02	1.48	1.65	0.16	-0.14
Standard Deviation (SD)	0.68	0.82	0.14	0.73	0.80	0.07	0.07
Not sure/ Not applicable	2%	1%	-1%	1%	1%	0%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

H1d. Unpleasant odors coming from outside the home.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	1.45	1.40	-0.05	1.35	1.43	0.08	-0.14
Standard Deviation (SD)	0.71	0.68	-0.03	0.81	0.91	0.11	-0.14
Not sure/ Not applicable	2%	3%	1%	4%	5%	1%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

H1f. Noise coming from outside when the windows were closed that made it hard to focus or hard to sleep.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	2.00	1.82	-0.18	1.94	1.87	-0.07	-0.12
Standard Deviation (SD)	1.20	1.10	-0.10	1.07	1.10	0.03	-0.13
Not sure/ Not applicable	2%	1%	-1%	3%	3%	0%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

H1g. Roof leaks and/or window leaks when it rains.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	1.34	1.32	-0.03	1.36	1.47	0.11	-0.14
Standard Deviation (SD)	0.83	0.84	0.01	0.81	1.05	0.24	-0.23
Not sure/ Not applicable	4%	2%	-2%	4%	5%	1%	-3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

H1h. Basement water backup or flooding.

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	1.57	1.44	-0.13*	1.77	1.73	-0.04*	-0.09
Standard Deviation (SD)	0.91	0.76	-0.14	1.03	1.05	0.02	-0.16
Not sure/ Not applicable	17%	14%	-3%	14%	13%	-1%	-2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the p<0.10 level.

H2. In general, would you say your physical health is...? 1 meaning “Excellent” and 5 meaning “Poor.”

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	2.83	2.87	0.04	2.88	2.96	0.09	-0.05
Standard Deviation (SD)	1.22	1.11	-0.11	1.05	1.01	-0.04	-0.07

H3. Now thinking about mental health, which includes stress, anxiety, and depression, how often was your mental health not good? 1 meaning “Never” and 5 meaning “Most or all of the time.”

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	2.60	2.73	0.12	2.54	2.74	0.20	-0.08
Standard Deviation (SD)	1.58	1.46	-0.12	1.21	1.33	0.12	-0.24

H4. In the last 12 months, how often, if ever, did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation? 1 meaning “Never” and 5 meaning “Most or all of the time.”

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	2.59	2.37	-0.23	2.46	2.21	-0.25*	0.02
Standard Deviation (SD)	1.37	1.39	0.02	1.30	0.98	-0.32	0.34

\*Significant difference at the p<0.10 level.

H5a. Which of the following describes the employment status of at least one individual, aged 17 and older, in your household during the past month?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Employed full-time	45%	57%	11%*	45%	60%	15%*	-4%
Retired	29%	44%	15%*	33%	46%	14%*	2%
Employed part-time	21%	44%	24%*	20%	39%	19%*	5%
Homemaker	9%	26%	17%*	10%	25%	15%*	2%
In school or college and not working	9%	34%	25%*	10%	34%	24%*	1%
Not employed, but actively looking	9%	23%	14%*	10%	29%	19%*	-5%
Self-employed	10%	29%	19%*	5%	28%	23%*	-4%
Not employed, and not looking	8%	27%	19%*	4%	24%	20%*	-1%
Furloughed due to COVID-19	2%	21%	19%*	5%	21%	16%*	3%
Disability	7%	0%	-7%*	4%	0%	-4%*	-3%

Note: This was a multiple response question.

\*Significant difference at the  $p < 0.10$  level.

H5b. Which of the following best describes your and/or other household members' workplace experience during the last month? [LOOP THROUGH H5B FOR EACH EMPLOYED, UP TO FOUR]

Response	Treatment Group (n=61, 65)			Compare Group (n=47, 49)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Employed person #1</b>	Treatment Group (n=61, 65)			Compare Group (n=47, 49)			
Working on location at employer's facility all the time	69%	74%	5%	77%	80%	3%	2%
Working away from employer's facility all the time	13%	9%	-4%	9%	4%	-4%	1%
A mix of working on location at and remotely away from employer's facility or building	18%	15%	-3%	15%	12%	-3%	0%
Other, please specify	0%	2%	2%	0%	4%	4%	-3%
<b>Employed person #2</b>	Treatment Group (n=25, 31)			Compare Group (n=20, 22)			
Working on location at employer's facility all the time	80%	71%	-9%	85%	82%	-3%	-6%
Working away from employer's facility all the time	8%	10%	2%	10%	18%	8%	-7%
A mix of working on location at and remotely away from employer's facility or building	8%	16%	8%	5%	0%	-5%	13%
Other, please specify	4%	3%	-1%	0%	0%	0%	-1%
<b>Employed person #3</b>	Treatment Group (n=5, 4)			Compare Group (n=3, 5)			
Working on location at employer's facility all the time	40%	50%	10%	100%	100%	0%	10%
Working away from employer's facility all the time	40%	50%	10%	0%	0%	0%	10%
Other, please specify	20%	0%	-20%	0%	0%	0%	-20%
<b>Employed person #4</b>	Treatment Group (n=2, 1)			Compare Group (n=2, 2)			
Working on location at employer's facility all the time	100%	0%	-100%	100%	100%	0%	-100%

Note: This was a multiple response question. Also, this was not asked of those persons who were not currently employed (H5a).

H6. Thinking about the last 12 months, how many days of work did individuals in your home miss because they or someone else in the household were sick with colds, COVID-19, the flu, sinus infections, or some other respiratory infection like bronchitis or pneumonia?

Response	Treatment Group (n=68, 70)			Compare Group (n=54, 51)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Employed person #1</b>	Treatment Group (n=68, 70)			Compare Group (n=54, 51)			
Mean	6.75	6.79	0.04	5.80	6.81	1.01	-0.97
SD	13.27	10.35	-2.92	9.93	10.13	0.20	-3.11
Not sure	22%	11%	-11%	7%	6%	-1%	-10%
<b>Employed person #2</b>	Treatment Group (n=32, 34)			Compare Group (n=29, 26)			
Mean	4.00	5.67	1.67	6.15	4.30	-1.85	3.52



SD	6.83	6.01	-0.82	14.69	4.88	-9.81	8.99
Not sure	16%	12%	-4%	7%	12%	5%	-9%
<b>Employed person #3</b>	<b>Treatment Group (n=7, 5)</b>			<b>Compare Group (n=3, 6)</b>			
Mean	0.00	0.50	0.50	1.67	3.80	2.13	-1.63
SD	0.00	1.00	1.00	2.89	2.73	-0.16	1.16
Not sure	29%	20%	-9%	0%	17%	17%	-26%
<b>Employed person #4</b>	<b>Treatment Group (n=2, 1)</b>			<b>Compare Group (n=2,2)</b>			
Mean	0.00	0.00	0.00	2.50	2.50	0.00	0.00
SD	0.00	0.00	N/A	3.54	3.54	0.00	0.00
Not sure	67%	100%	33%	0%	0%	0%	33%

Note: This was asked for each “working” person (H5a).

H7. Did any wage earner in your household receive paid sick time through their employer(s) during the last 12 months?

Response	Treatment Group (n=68, 70)			Compare Group (n=54, 51)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	34%	36%	2%	30%	47%*	17%	-16%
No	62%	63%	1%	65%	53%	-12%	13%
Not sure	4%	1%	-3%	6%	0%	-6%	3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was asked of the respondent if at least 1 “working” person (H5a) was in the household.

\*Significant difference at the p<0.10 level.

## ASTHMA

A1. Has a physician or doctor ever diagnosed you or any members of your household with asthma?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	26%	26%	0%	19%	19%	0%	0%
No	69%	69%	0%	76%	78%	1%	-1%
Not sure	5%	5%	0%	5%	4%	-1%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

A2. Do you or anyone in your household still have asthma symptoms?

Response	Treatment Group (n=28, 28)			Compare Group (n=15, 15)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	89%	71%	-18%*	80%	73%	-7%	-11%
No	7%	18%	11%	13%	13%	0%	11%
Not sure	4%	11%	7%	7%	13%	7%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered “Yes” in A1.

\*Significant difference at the p<0.10 level.

A3. Including yourself, how many adults 18 years or older in your household still have asthma symptoms, if any?

Response	Treatment Group (n=25, 20)			Compare Group (n=12, 11)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
0	16%	15%	-1%	17%	9%	-8%	7%
1	80%	85%	5%	83%	73%	-10%	15%
2	4%	0%	-4%	0%	18%	18%	-22%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered "Yes" in A2.

A4a. How many times did [SHOW IF A3=1: this adult] [SHOW IF A3 =2,3,4,5: any of these adults] use an emergency inhaler?

Response	Treatment Group (n=21, 17)			Compare Group (n=10, 10)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Adult #1</b>	<b>Treatment Group (n=21, 17)</b>			<b>Compare Group (n=10, 10)</b>			
Daily	19%	29%	10%	30%	50%	20%	-10%
Weekly	19%	12%	-7%	30%	20%	-10%	3%
Monthly	5%	6%	1%	0%	0%	0%	1%
Occasionally	24%	29%	6%	20%	30%	10%	-4%
Rarely	19%	18%	-1%	0%	0%	0%	-1%
Never	10%	6%	-4%	20%	0%	-20%	16%
Not sure	5%	0%	-5%	0%	0%	0%	-5%
<b>Adult #2</b>	<b>Treatment Group (n=1, 0)</b>			<b>Compare Group (n=0, 2)</b>			
Daily	0%	N/A	N/A	N/A	50%	N/A	N/A
Occasionally	100%	N/A	N/A	N/A	0%	N/A	N/A
Not sure	0%	N/A	N/A	N/A	50%	N/A	N/A

Note: This was only asked of those who answered "Yes" in A1 and if they have at least one adult with asthma in A3.

A4b. And in the last 12 months, how many times did they...?

Response	Treatment Group (n=21, 17)			Compare Group (n=10, 10)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Go to an urgent care clinic or doctor's office?</b>							
Mean of adult 1	1.67	1.76	0.10	0.70	5.10	4.40	-4.30
SD of adult 1	1.93	2.56	0.63	1.16	9.37	8.21	-7.58
Mean of adult 2	2.00	N/A	N/A	N/A	1.50	N/A	N/A
SD of adult 2	N/A	N/A	N/A	N/A	2.12	N/A	N/A
<b>Go to the emergency room (ER), but not stay overnight?</b>							
Mean of adult 1	0.14	0.29	0.15	0.40	0.70	0.30	-0.15
SD of adult 1	0.65	0.69	0.03	0.97	1.25	0.29	-0.25
Mean of adult 2	0.00	N/A	N/A	N/A	0.00	N/A	N/A
SD of adult 2	N/A	N/A	N/A	N/A	0.00	N/A	N/A
<b>Go to the hospital and stay overnight?</b>							
Mean of adult 1	0.00	0.00	0.00	0.00	0.20	0.20	-0.20
SD of adult 1	0.00	0.00	0.00	0.00	0.63	0.63	-0.63
Mean of adult 2	0.00	N/A	N/A	N/A	0.00	N/A	N/A
SD of adult 2	N/A	N/A	N/A	N/A	0.00	N/A	N/A

Note: This was only asked of those who answered "Yes" in A1 and if they have at least one adult with asthma in A3.

\*Significant difference at the p<0.10 level.

A5. How many children younger than 18 have asthma symptoms?

Response	Treatment Group (n=12, 12)			Compare Group (n=4, 3)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
0	50%	58%	8%	25%	0%	-25%	33%
1	25%	33%	8%	50%	100%	50%	-42%
2	17%	0%	-17%	25%	0%	-25%	8%
3	8%	8%	0%	0%	0%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered "Yes" in A2 and have children in the home (S7).

A6a. How many times did [SHOW IF A3=1: this child] [SHOW IF A3 =2,3,4,5: any of these children] use an emergency inhaler?

Response	Treatment Group (n=6, 5)			Compare Group (n=3, 3)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Child #1</b>	<b>Treatment Group (n=6, 5)</b>			<b>Compare Group (n=3, 3)</b>			
Daily	17%	20%	3%	33%	33%	0%	3%
Weekly	0%	40%	40%	67%	33%	-33%	73%
Monthly	0%	20%	20%	0%	33%	33%	-13%
Occasionally	33%	0%	-33%	0%	0%	0%	-33%
Rarely	0%	0%	0%	0%	0%	0%	0%
Never	33%	20%	-13%	0%	0%	0%	-13%
Not sure	17%	0%	-17%	0%	0%	0%	-17%
<b>Child #2</b>	<b>Treatment Group (n=3, 1)</b>			<b>Compare Group (n=1, 0)</b>			
Daily	33%	0%	-33%	100%	N/A	N/A	N/A
Occasionally	67%	100%	33%	0%	N/A	N/A	N/A
<b>Child #3</b>	<b>Treatment Group (n=1, 1)</b>			<b>Compare Group (n=0, 0)</b>			
Occasionally	100%	100%	0%	N/A	N/A	N/A	N/A

Note: This was only asked of those who answered "Yes" in A1 and if they have at least one child with asthma in A5.

A6b. And in the last 12 months, how many times did they...?

Response	Treatment Group (n=6, 5)			Compare Group (n=3, 3)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Go to an urgent care clinic or doctor's office?</b>							
Mean of child 1	1.67	2.80	1.13	2.00	1.33	-0.67	1.80
SD of child 1	1.63	2.39	0.75	2.00	1.53	-0.47	1.23
Mean of child 2	4.00	0.00	-4.00	1.00	N/A	N/A	N/A
SD of child 2	0.00	N/A	0.00	N/A	N/A	N/A	N/A
Mean of child 3	4.00	0.00	-4.00	N/A	N/A	N/A	N/A
SD of child 3	N/A	N/A	0.00	N/A	N/A	N/A	N/A
<b>Go to the emergency room (ER), but not stay overnight?</b>							
Mean of child 1	0.50	0.40	-0.10	0.33	0.67	0.33	-0.43
SD of child 1	0.84	0.55	-0.29	0.58	1.15	0.58	-0.87
Mean of child 2	0.00	0.00	0.00	0.00	N/A	N/A	N/A
SD of child 2	0.00	N/A	0.00	N/A	N/A	N/A	N/A
Mean of child 3	0.00	0.00	0.00	N/A	N/A	N/A	N/A
SD of child 3	N/A	N/A	0.00	N/A	N/A	N/A	N/A
<b>Go to the hospital and stay overnight?</b>							
Mean of child 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD of child 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of child 2	0.00	0.00	0.00	2.00	N/A	N/A	N/A
SD of child 2	0.00	N/A	0.00	N/A	N/A	N/A	N/A
Mean of child 3	9.00	0.00	-9.00	N/A	N/A	N/A	N/A
SD of child 3	N/A	N/A	0.00	N/A	N/A	N/A	N/A

Note: This was only asked of those who answered "Yes" in A1 and if they have at least one child with asthma in A5.

## THERMAL HEAT STRESS

- T1. Which of the following best describes the typical indoor temperature in your home during the past summer? 1 = Very cold and 7 = Very hot

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	4.21	4.25	0.04	3.88	4.15	0.26*	-0.22
Standard Deviation (SD)	0.72	0.65	-0.07	0.59	0.57	-0.02	-0.05
Not sure/ Not applicable	4%	3%	-1%	0%	0%	0%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the  $p < 0.10$  level.

- T2. During the past summer, did you or anyone in your household ever feel so badly that they sought medical attention for their symptoms because it was too hot inside your home?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	3%	4%	1%	0%	0%	0%	1%
No	93%	93%	0%	100%	98%	-3%	3%
Not sure/ Prefer to not say	4%	3%	-1%	0%	3%	3%	-4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

- T3. How many people in your home sought medical attention for these symptoms?

Response	Treatment Group (n=3, 4)			Compare Group (n=0, 0)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
One person	67%	75%	8%	N/A	N/A	N/A	N/A
None/Not sure	33%	25%	-8%	N/A	N/A	N/A	N/A
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered "Yes" in T2.

- T4. To get health care because it was so hot in your home, how many times during the past summer did this person or each of these people...?

Response	Treatment Group (n=2, 3)			Compare Group (n=0, 0)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Go to an urgent care clinic or doctor's office?</b>							
Mean	1.00	6.00	5.00	N/A	N/A	N/A	N/A
SD	1.41	7.81	6.40	N/A	N/A	N/A	N/A
<b>Go to the emergency room (ER), but not stay overnight?</b>							
Mean	1.00	1.00	0.00	N/A	N/A	N/A	N/A
SD	0.00	0.00	0.00	N/A	N/A	N/A	N/A
<b>Go to the hospital and stay overnight?</b>							
Mean	0.00	0.00	0.00	N/A	N/A	N/A	N/A
SD	0.00	0.00	0.00	N/A	N/A	N/A	N/A

Note: This was only asked of those who answered at least one person in T3.

T5. Which of the following best describes the typical indoor temperature in your home during the past winter? 1 = Very cold and 7 = Very hot

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Mean	3.44	3.68	0.23*	3.70	3.62	-0.07	0.31*
Standard Deviation (SD)	0.88	0.78	-0.10	0.67	0.69	0.01	-0.12
Not sure/ Not applicable	2%	3%	1%	0%	0%	0%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the  $p < 0.10$  level.

T6. During the past winter, did you or anyone in your household ever feel so badly that they sought medical attention for their symptoms because it was too cold inside your home?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Yes	0%	0%	0%	0%	3%	3%*	-3%
No	96%	96%	0%	100%	96%	-4%	4%
Not sure/ Prefer to not say	4%	4%	0%	0%	1%	1%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\*Significant difference at the  $p < 0.10$  level.

T7. How many people in your home sought medical attention for these symptoms?

Response	Treatment Group (n=0, 0)			Compare Group (n=0, 2)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
One person	N/A	N/A	N/A	N/A	50%	N/A	N/A
Two people	N/A	N/A	N/A	N/A	0%	N/A	N/A
None/Not sure	N/A	N/A	N/A	N/A	50%	N/A	N/A
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was only asked of those who answered "Yes" in T6.

T8. To get health care because it was so cold in your home, how many times during the past winter did this person or each of these people...?

Response	Treatment Group (n=0, 0)			Compare Group (n=0, 1)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Go to an urgent care clinic or doctor's office?</b>							
Mean	N/A	N/A	N/A	N/A	1.00	N/A	N/A
SD	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Go to the emergency room (ER), but not stay overnight?</b>							
Mean	N/A	N/A	N/A	N/A	1.00	N/A	N/A
SD	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Go to the hospital and stay overnight?</b>							
Mean	N/A	N/A	N/A	N/A	0.00	N/A	N/A
SD	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: This was only asked of those who answered at least one person in T7.

## DEMOGRAPHICS

D1. Which of the following best describes your residence?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
One person	94%	100%	-6%
Two people	2%	0%	2%
None/Not sure	4%	0%	4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

Note: This was only asked in the pre-period survey.

D2. Approximately, how old is your home?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
2 to 10 years	0%	0%	0%
11 to 20 years	4%	3%	1%
21 to 30 years	8%	6%	1%
31 to 40 years	12%	6%	6%
41 to 50 years	14%	9%	5%
51 to 60 years	19%	21%	-2%
61 to 70 years	19%	21%	-2%
71 to 80 years	6%	6%	-1%
81 to 90 years	5%	5%	0%
91 to 100 years	3%	10%	-7%
Over 100 years	8%	9%	0%
Not sure	3%	4%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

Note: This was only asked in the pre-period survey.

D3. What was the annual income of your household for 2020?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Less than \$28,000	35%	29%	-6%	39%	28%	-11%	6%
\$28,001 to \$38,000	24%	18%	-6%	19%	28%	9%	-14%
\$38,001 to \$48,000	10%	16%	6%	18%	19%	1%	4%
\$48,001 to \$58,000	11%	13%	2%	13%	10%	-3%	4%
\$58,001 to \$68,000	8%	8%	0%	1%	4%	3%	-3%
\$68,001 to \$78,000	3%	0%	-3%	1%	3%	1%	-4%
\$78,001 to \$88,000	2%	2%	0%	3%	1%	-1%	1%
\$88,001 to \$98,000	0%	1%	1%	0%	0%	0%	1%
\$98,001 to \$108,000	0%	2%	2%	0%	0%	0%	2%
\$108,001 to \$200,000	0%	1%	1%	1%	3%	1%	0%
Not sure/ Prefer not to answer	8%	10%	3%	6%	6%	0%	3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>



D4. What type of air conditioning do you have to cool your home?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Central air conditioning	81%	84%	3%	91%	93%	1%	2%
Window unit, wall unit, or portable air conditioner	19%	15%	-4%	11%	14%	3%	-6%
Heat pump	7%	6%	-1%	5%	3%	-3%	2%
No air conditioning	1%	0%	-1%	1%	0%	-1%	0%
Not sure	1%	2%	1%	0%	0%	0%	1%

Note: This was a multiple response question.

D4a. Which of the following describes the current status of your [IF D4=98 air conditioning ELSE <D4 RESPONSE>]?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Central air conditioning</b>							
Functioning properly	81%	75%	-6%	89%	93%	4%	-10%
In need of repair	12%	17%	5%	10%	4%	-6%	11%
Broken down	1%	1%	0%	0%	0%	0%	0%
Other	6%	7%	1%	1%	3%	1%	-1%
<b>Window unit, wall unit, or portable air conditioner</b>							
Functioning properly	68%	33%	-35%	88%	82%	-6%	-29%
In need of repair	16%	47%	31%	13%	18%	6%	25%
Broken down	5%	7%	1%	0%	0%	0%	1%
Other	11%	13%	3%	0%	0%	0%	3%
<b>Heat pump</b>							
Functioning properly	83%	67%	-17%	100%	100%	0%	-17%
In need of repair	17%	17%	0%	0%	0%	0%	0%
Other	0%	17%	17%	0%	0%	0%	17%

Note: This was a multiple response question.

D5. What type of fuel do you primarily use to heat your home?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
Natural gas	72%	84%	-12%
Electricity	23%	14%	9%
Wood or wood pellets	0%	1%	-1%
Not sure	6%	1%	4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

Note: This was only asked in the pre-period survey.

D6. What type of heating system do you use as your primary source of heat?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Central forced air furnace	84%	86%	2%	91%	90%	-1%	3%
Heat pump	4%	7%	3%	5%	3%	-2%	5%
Boiler	5%	3%	-2%	3%	4%	1%	-3%
Electric resistance	4%	0%	-4%	1%	0%	-1%	-3%
Not sure	4%	3%	-1%	0%	1%	1%	-2%
Other	0%	2%	2%	0%	3%	3%	-1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was a multiple response question.

D6a. Which of the following describes the current status of your [IF D4=98 heating system ELSE <D4 RESPONSE>]?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
<b>Central forced air furnace</b>	Treatment Group (n=88, 91)			Compare Group (n=73, 71)			
Functioning properly	92%	96%	4%	90%	94%	4%	0%
In need of repair	5%	3%	-2%	5%	1%	-4%	2%
Broken down	0%	0%	0%	1%	0%	-1%	1%
Other	2%	0%	-2%	1%	3%	2%	-4%
Not sure	1%	1%	0%	1%	1%	0%	0%
<b>Heat pump</b>	Treatment Group (n=4, 7)			Compare Group (n=4, 2)			
Functioning properly	100%	71%	-29%	100%	100%	0%	-29%
In need of repair	0%	14%	14%	0%	0%	0%	14%
Other	0%	14%	14%	0%	0%	0%	14%
<b>Boiler</b>	Treatment Group (n=5, 3)			Compare Group (n=2, 3)			
Functioning properly	80%	67%	-13%	100%	100%	0%	-13%
In need of repair	20%	33%	13%	0%	0%	0%	13%
<b>Electric resistance</b>	Treatment Group (n=4, 0)			Compare Group (n=1, 0)			
Functioning properly	50%	N/A	N/A	100%	N/A	N/A	N/A
In need of repair	50%	N/A	N/A	0%	N/A	N/A	N/A

Note: This was a multiple response question.

D7. What type of heating system do you use as your primary source of heat?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
Natural gas	66%	66%	66%
Electric	28%	30%	29%
Not sure	6%	4%	5%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Note: This was only asked in the pre-period survey.

D7b. What type of water heating system(s) do you have?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Tank	92%	89%	-4%	94%	95%	1%	-5%
Tankless	5%	5%	0%	4%	4%	0%	0%
Other	0%	1%	1%	3%	0%	-3%	3%
Not sure	4%	6%	2%	1%	3%	1%	1%

Note: This was a multiple response question.

D7a. Which of the following describes the status of your water heater?

Response	Treatment Group (n=106)			Compare Group (n=80)			Total
	Pre-Period	Post-Period	Change	Pre-Period	Post-Period	Change	Net Difference
Functioning properly	83%	81%	-2%	81%	80%	-1%	-1%
In need of repair	10%	10%	0%	10%	8%	-2%	2%
Broken down	0%	2%	2%	1%	1%	0%	2%
Other	6%	5%	-1%	6%	10%	4%	-5%
Not sure	1%	2%	1%	1%	1%	0%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Note: This was a multiple response question.

D8. What languages are spoken in your home?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
English	100%	100%	79%
Spanish	1%	1%	11%
Mandarin or Cantonese	0%	0%	3%
Russian	1%	0%	0%
Arabic	0%	0%	1%
Other	1%	0%	1%

Note: This was a multiple response question. Also, this was only asked in the pre-period survey.

D9. What is your race/ethnicity?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
White	75%	85%	79%
Black or African American	13%	8%	11%
Hispanic or Latino	3%	4%	3%
Asian	0%	0%	0%
American Indian or Alaska Native	1%	0%	1%
Native Hawaiian or Other Pacific Islander	0%	1%	1%
Prefer not to say	11%	6%	9%

Note: This was a multiple response question. Also, this was only asked in the pre-period survey.

D10. What age group are you in?

Response	Treatment Group (n=106)	Compare Group (n=80)	Total
Under 25 years	2%	3%	-1%
25 - 34 years	18%	11%	7%
35 - 44 years	28%	14%	15%
45 - 55 years	10%	15%	-5%
55 - 64 years	18%	25%	-7%
65 years and older	22%	33%	-11%
Prefer not to say	2%	0%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

Note: This was only asked in the pre-period survey.



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