



ASSESSING THE NETWORK EFFECT OF ISEIF'S
PUBLIC EDUCATION EFFORTS
EXECUTIVE SUMMARY AND RECOMMENDATION
TO
ILLINOIS SCIENCE & ENERGY INNOVATION
FOUNDATION

LOYOLA UNIVERSITY CHICAGO CENTER FOR URBAN RESEARCH AND LEARNING
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Executive Summary and Recommendations

Introduction

This research project investigated the impact of the educational efforts and the network effect of ISEIF-funded public education related to the new digital electrical system. To conduct this research, ISEIF partnered with the Loyola University Chicago Center for Urban Research and Learning and the Social IMPACT Research Center at Heartland Alliance in the spring of 2016. Researchers collaborated with three of ISEIF's grantees to collect data from public education event attendees: The Citizens Utility Board (CUB), Elevate Energy and Faith in Place.

In the first year of research, data collection posed a huge challenge. Because the public education events were relatively low touch and relationships between attendee and presenter were typically not developed beyond the event itself, recruitment of past attendees proved very difficult (despite the offer of incentives and phone options). However, the small amount of information collected did point to the need for further investigation. Interviewees generally seemed to confuse or conflate different sources of information, not remember where they heard different facts, and feel unsure of who they should trust. Researchers inferred that participants would not be able to differentiate between information gained via ISEIF-funded education, ComEd, and third party energy suppliers, which would muddy the learnings of a random sample survey, which was planned for the second year, aimed at measuring the network effect of grantee public education events. For that reason, researchers extended the preliminary research to focus more effort on recruitment of participants from current events. The individuals recruited would then be queried at two points in time to ascertain the impact of the presentation on knowledge retention and subsequent actions, including sharing of information with others.

In addition, a literature review was initiated. It examined research regarding the impact of the public education on target populations' knowledge retention, subsequent actions and networking effects.

What follows is a summary of, first, the findings from the extended local research, and second, the literature review. It is followed by a discussion of the joint findings and recommendations for the possibility of further research and/or programming.

Research Questions

- What is the impact of the presentations on the participants, in particular information about the smart meter? What did they learn and what subsequent actions did they take?
- What is the network effect of ISEIF-funded educational events, particularly around knowledge about smart meters?

Methods

Recruitment

Researchers attended nine educational events—public presentations, Utility Bill Clinics and House Parties-- between May 2017 and February 2018. These events occurred in five Chicago communities: Little Village, Grand Boulevard, Clearing, Edgewater and Albany Park, and two suburbs: Niles, and

Skokie. Researchers recruited attendees from these events, then followed up with those attendees via phone and/or email to schedule focus groups or interviews. Unsurprisingly, participation and follow-through was more common with more engaged audiences – people who had engaged with staff one-on-one in clinics, or pre-existing common interest groups who had a guest speaker attend one of their regular meetings. Less engaged audiences, such as a group of strangers attending a presentation in a public space, did not follow through on data collection activities as often, even if willing to share contact information with researchers.

Researchers collected data from participants at two points in time following the educational event they attended. Altogether, 48 respondents participated in the research. Forty-seven participated in focus groups or interviews at Time 1 and thirty-four participated in interviews at Time 2. The focus groups and interviews were conducted in either English or Spanish. The same open-ended questions were used at Time 1 and Time 2.

An equal number of women and men participated in the study, ranging in age from 20 to 86, with a median age of 64. Eight individuals' (17%) preferred or only language was Spanish (primarily attendees from the Faith in Place education event in Little Village) – their interviews and focus group were conducted in Spanish.

Data Limitations

In considering the findings, the limitations of the data need to be kept in mind. Those individuals who shared their contact information, participated in focus groups and interviews at Time 1, and then participated in the subsequent interviews at Time 2 could vary in intent and interest from those who did not. Secondly, the sample size allowed for very limited data analysis, and an inability to conduct any multi-variate analysis.

Key Research Findings

Knowledge Retention Not Problematic

We found strong knowledge retention at Time 1 and Time 2. All presentation participants interviewed at Time 2 remembered at least one item from the presentation; with over half (60%) reporting more than one item from the event they attended concerning the smart meter or a utility saving technique.

The Strong Message of Savings

In all the discussions in Focus Groups and Interviews at Time 1 and in the following interviews at Time 2, monetary savings was a key theme. When participants were asked to list the most important items they learned from any educational event, the most cited information was related to saving on their utilities. Strategies for saving money were a key component in what all participants recalled from the presentations, although there were no clear trends related to one strategy or energy source. Respondents mentioned hearing information about LED light bulbs and the availability of in-home consultations, bill analysis and routinely checking electricity and gas bills, and the peak or hourly savings programs. Conversely, when individual respondents explained why they had not followed through on one strategy or another, most notably the peak or hourly savings programs, they stated they felt they would not save any—or just a scant—amount of money.

The Weaker Message of Smart Grid Technology

Thirty eight percent of those interviewed at Time 2 specifically identified smart meter as an important item of information that they learned from the presentations, and a much larger--seventy-four percent--number of respondents remembered hearing at least one piece of information regarding the smart meter during the event they attended. Most of those reported learning new information. Respondents mainly recalled their learnings about smart meters as a means to an ends: saving money on electric bills. More specifically, in many cases they knew they could use the smart meter to track their utility usage and subsequently change their habits and/or sign up for different plans offered by ComEd to save on their bills. Learning more about the smart meters and the smart grid did not appear to be the motivation to attend the various public education events -- it was simply something they learned in addition to saving money and other issues related to utility usage.

Confusion about Smart Meter and Smart Grid Technology

While some respondents appeared to have a general and accurate understanding of the technology behind the smart grid and smart meters, there were also a few participants that came to the education events with prior, inaccurate knowledge. Ideas that more or less represented conspiracy theories about illnesses that could be derived from the proximity of a smart meter to one's home or the loss of control of one's access to energy were expressed in more than one focus group. These ideas were in the minority of responses, but a lack of understanding and interest in the technical aspects of the grid were present throughout the study. The public education events appeared to do little to change respondents' previous impressions of smart meters. While they increased their knowledge about the benefits of smart meters in relation to their utility bills, they did not generally leave with a deeper understanding of the technical aspects of the smart grid.

The Utility Bill Clinic

Utility bill clinic participants were significantly more likely to remember information about saving money on utility bills and were more likely to share information with others. Although it is unclear why this is the case, it could be due to the utility bill clinics' self-selection by individuals actively seeking information about their utility bills. It is also possible that the utility bill clinic model is a better vehicle for transmitting information, or both.

Actions and Behavior Changes

Most event participants reported using the information they learned at events either to make a change within their utility plans, their homes, or their behavior concerning energy consumption. For instance, one respondent described how attending the educational event "has propelled me, might I say, to kind of put up of a more emphasis on energy conservation within my family" (Utility Bill Clinic participant). Most changes were not directly related to the smart meter per se, with only 4 participants (12%) monitoring usage and changing it with an Hourly Pricing Program. However, over half (56%) reported using more energy saving devices. And, between a quarter and a third (29%) completed a home assessment/in-house consultation. Five individuals (15%) switched suppliers. In four of these cases, this was a return to ComEd, reporting that they had gone to another supplier thinking they would get lower rates and that had not been the case.

However, for a few, making upgrades to more energy efficient appliances was an investment they were not financially ready to make. For some, even a power strip was out of reach: "It was a little bit out of my budget at the time, but I was definitely intrigued by the explanation of that technology and it seems really cool. I just wasn't in a financial position to make that investment" (General Presentation participant).

Sharing Information

The vast majority (79%) of respondents report that they shared what they learned in the presentations with others or planned to, and just under a third specifically shared or planned to share information specifically about the smart meters.

The information seemed to have been shared in a variety of ways. The most prevalent sharing was general information about low hanging fruit such as the benefits of using LED lights and dealing with drafts and energy leaks in their home. Some people hinted that smart meter information was less likely to be shared because it was too complex to talk about (and wished there was some handouts “so I could read up on it and truly understand smart meter process”). Others said that unlike general saving tips, it was just not as appealing and it did not come to mind when they were describing what they learned in the presentations.

It seemed that most interviewees shared information with people within their networks such as close friends, neighbors, and especially family, including grandparents, nieces, in-laws, and children. Of note was two respondents who used professional and organizational networks: a real estate agent who frequently participated in an educational event (in this case a Utility Bill Clinic), to keep informed on new technologies and programs to share with colleagues and clients; and a member of a neighborhood organization who shared information on the neighborhood list serve.

Key factors from Literature Review

The review of the literature found a dearth of research on the ways information about the smart grid is shared among consumers, although there are select studies that have explored consumer knowledge and confidence about the smart grid (Poncea et al 2016; Krishnamurti 2012). In addition, there are other studies (Jenkins et al, 1999; Geroski 2000; Goldenbert, Libai and Muller 2001; Berwick, 2002; Marcell, Agyeman and Rappaport 2004; Jackson 2008; Wells et al, 2011; Gray, Elliot and Wale 2013; Anda, 2014) about effective public education and social marketing in a number of areas, especially including public health and green technology that are applicable to our inquiry.

Consumer Knowledge about the Smart Grid

Through 22 open-ended phone interviews and 126 surveys with potential smart grid customers within a US Mid-Atlantic electricity utility area, Krishnamurti (2012) found that consumers were optimistic about the smart grid, but they were unclear about the technology and its potential benefits. For instance, many customers perceived the smart grid would: increase costs; limit their control over their electricity usage; and risk their privacy regarding patterns of energy consumption (Krishnamurti 2012). Another study highlighted consumers’ concerns regarding radio frequency emission through smart grid technologies (Gupta 2012). This research pointed to mixed perceptions and consumer knowledge about the smart grid and the potential need to educate communities.

Other Studies

Consumer Feedback.

It is important to utilize research to ensure consumer feedback. Research needs to focus on how the energy consumers - especially underrepresented and low resourced groups like low-income and elderly

consumers - learn from the public education campaign and how they utilized that knowledge. This information can then be used to modify and refine the campaign to ensure its effectiveness (Berwick, 2002; Anda, 2014).

Utilizing Networks and Target Community Education.

Word-of-mouth, using personal networks to influence personal behavior, and targeted community education for the dissemination of information are especially effective methods for knowledge dissemination (Geroski 2000; Goldenbert, Libai and Muller 2001; Long, Harre and Atkinson 2014). Studies show that information has a greater weight for mirroring (or copying) certain behavior when it comes from existing networks (friends, family, co-workers), other mechanisms of word-of-mouth can also be utilized. One study (Wells and colleagues, 2011) on the use of lay community health workers to increase knowledge and use of mammograms provides important implications for planning public education trainings. The study finds that the spread of knowledge is best accomplished in urban areas and within culturally competent settings where the educator is of a similar racial or ethnic group. Related findings also highlight the importance of recruiting “opinion leaders” (See Katz and Lazarfeld as cited in Jackson 2008) who are already inclined to show interest about the topic (ie. medical settings for health technologies).

Combining Different Information Strategies.

Studies have examined the effectiveness of workshops (Gray, Elliot and Wale 2013) and social marketing campaigns, also known as media campaigns, to targeted populations for initiating the spread of information (Marcell, Agyeman and Rappaport 2004; Jenkins et al 1999). Social marketing can be particularly useful within efforts to influence consumer actions, as this method is highly suggestive of specific behaviors.

Research shows that consumers are more likely to change their energy consumption behavior if 1) they recognize their contributions to the environment and 2) their neighbors and communities are also invested (McKenzie-Mohr; Anda 2014). Studies in the US as well as those in developing countries have sought to understand both the effects of environmental education and how marketing influences consumer behavior (Barone, Miyazaki and Taylor 2000; Hamid, Khan, Kiani, Sha, Kiani 2014; Bagheri 2014). For instance, in a study of sustainable consumption, researchers evaluated the effects of a social marketing campaign on students’ energy conservation. Using a pre and post surveys eight weeks apart, researchers found that a social marketing campaign, or directly encouraging students to turn off their personal computers when not in use, was more effective in changing students’ electricity use than an education program about greenhouse emission alone (Marcell, Agyeman and Rappaport 2004).

Ongoing Educational Efforts and Follow-Through to a Population.

Marcell, Agyeman and Rappaport argue that given that consumption is a learning process, consumers learn based on the information they are exposed to. The large majority of information is learned through an actor’s social environment and the communicative acts of others. Although consumers are inevitably influenced by a “conformist bias” or the tendency to choose the option that is most accepted by the population, green consumption patterns cannot be “locked in” and are not self-reinforcing. Overall, this and other research suggests ongoing education is preferable over short-term information sharing in order to maintain the flow of information and influence.

Discussion

From the local research it was clear that individuals retained information over time from ISEIF funded presentations, acted upon some of that information, and to a large extent, shared that information. However, the public education impact on participants in retaining, acting upon and sharing information specifically about the smart meter programs was weaker. This reflected both that the public education presentations that we observed focus their message on strategies for utility savings in general, and also likely, in the intent and specific interest in attending consumers in reducing energy consumption and subsequently money spent on energy. In addition, we found some confusion about the technology of the smart meter and related billing programs. In fact, confusion about the smart grid was not unique to these Chicago area consumers, but was also noted in the literature. We found at least two studies specifically on the smart meter that point to the mixed perception and, in some cases, fears about the smart meters among the general user population.

There were other likely factors in the local research that pointed to reasons why the dissemination of information about the smart meter programs to their networks seemed to be weak. Individuals interviewed mentioned that they were insecure in their knowledge about the smart meter and their ability to explain the program to others. There was a suggestion by some research participants that there was a need for more accompanying written information, to help them understand smart meter programs, which they felt would make them more likely to share information about the programs to others in their personal networks.

In addition, only four individuals (12%) reported that subsequent to the presentation they became part of an hourly pricing program and used that program to monitor and save money. Yet, in the literature review, there was some mention that the impact of sharing knowledge in a personal network is more powerful if the individual who shares the knowledge has also acted upon that knowledge themselves. Other members of that network are more likely to act upon that knowledge similarly. (If the 12% holds true to the population, it would be very hard to discern any significant general impact in the community --leaving aside other issues such as size of individual personal networks, etc.)

The literature points to a number of possible strategies that have been successful in the public education dissemination. Among these, one strategy to consider is a tight coordination of multi-layer education strategies such as mailings and other social marketing with public presentation. Another is utilizing public community organizing techniques, including the use of trained peer communicators in low income communities of color and seniors consumers. A third is utilizing key opinion leaders from various community networks (such as the real estate agent interviewed in the local research project and as is being implemented in a recently initiated ISEIF project).

In conclusion, while the lighter touch of current smart meter education and other factors make the implementation of an earlier proposed experimental model of research measuring network effects in communities infeasible, there are a number of other possible research agendas that can be pursued to contribute to the understanding of the impact of local ISEIF projects. But that is not to discount that the lessons learned in this research already give us an understanding—although limited-- of how green public education is received and acted upon by consumers; knowledge the literature review has demonstrated is limited.

Recommendations

While what follows are some suggestions about future research agendas, we proposed it would be useful to have a discussion with ISEIF staff and grantees about some of the findings of this research in terms of both programming and future research possibilities. What does it mean that what captures the imagination of most of the consumers is saving money? Does there have to be a threshold saving effect before people act? Should peer training be incorporated into public education strategies? How could one have continued reinforcement education about energy saving and technology, or is that even feasible?

1) Now that some form of social media campaign, mainly mailings, and/or information about the smart meter has been incorporated in the public education events of the various consumer campaigns, we can investigate the overall understanding of the new smart grid and meters within the affected communities. A random sample phone survey more generally about understanding of the smart grid and meters could give a point in time snapshot of saturation of information from all sources. We could understand better consumers' perspectives and also what factors limited their understanding and actions.

2) The literature review points to possible future research. The Wilson and colleagues (2008) study on health messaging shows that the tracking of actions and intentions to act concerning particular topics can be accomplished through surveys of people connected to hubs of information within a defined area. If we connect this to smart meters, it seems plausible to assign several social sites as experimental locations with a control site. Clients could be surveyed at baseline to assess any differences in knowledge about the smart grid across sites. Last, clients could be surveyed after an intentional educational effort using different model(s).

For example, information sharing through door-to-door mini information sessions might be an option for spreading knowledge about smart meters. This aligns with community organizing models that train community members and then hire them as ambassadors to spread information about free meal sites, early learning enrollment options, and health initiatives within their own neighborhoods. Door knocking, usually accomplished in pairs, may benefit from the existing networks of the ambassadors; create an informal setting for information sharing and inquiry; and lessen possible cultural and language barriers to reaching consumers.

3) Different models could be assessed to understand the strength and weakness of different strategies suggested in the literature in increasing the network effect. For example:

- Focusing on key opinion leaders, such as the realtor program, perhaps incorporating different components in different campaigns.
- The peer model mentioned above.
- Saturate a network in depth: education at local schools and within the networks of a specific community.