# Moving the Needle: Measuring the Performance of an Energy Program Promotional Campaign

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## ABSTRACT

A key component of any demand side management program is recruiting participants through marketing and outreach activities, and measuring the success of these activities is critical in ascertaining whether marketing resources are used effectively. We describe one effort to measure the success of a promotional campaign by estimating the incremental program participation or "lift". We report on: 1) how to assess the performance of promotional campaigns using a quasi-experimental lift study; 2) key assumptions to consider when designing a lift study; and 3) challenges associated with rapidly assessing the effects of a promotion.

In 2013 the Independent Electricity System Operator in Ontario launched a promotional campaign to increase participation in three consumer programs: an HVAC program, an appliance recycling program, and a demand response program. The campaign leveraged a popular Canadian consumer rewards program, the AIR MILES® Reward Program, whereby consumers would register, participate in one or more programs, and then receive AIR MILES Reward Miles as an incentive.

Following the campaign launch, we surveyed consumers exposed to the campaign and those who were not (a quasi-experimental design). Lower-than-expected program participation rates during the initial study limited our ability to estimate the promotional lift. We surveyed additional consumers throughout 2014 to refine our lift estimates. During this process, we learned several important lessons: 1) the need for a deeper understanding of program participation rates; 2) the importance of clearly defining target and control groups; and 3) considering the time necessary for consumers to become aware and participate in a program.

## Introduction

Energy program administrators and implementers invest considerable resources to track program participation and energy savings. Equally important, however, are the marketing and outreach efforts of program staff and marketers to promote programs, raise consumer awareness, stimulate interest, and ultimately increase participation in programs. Because these efforts take time and require valuable program resources to implement, it is important to determine whether a promotional campaign is effective and is achieving its goals.

In the business marketing literature, promotional lift is a metric that is used to quantitatively assess the performance of promotional campaign (Farris, Bendle, Pfeifer, Reibstein 2006). In traditional marketing, promotional lift is a measure of incremental sales (usually expressed as a percentage) above a baseline sales level, which ideally, are attributable to the effects of a targeted promotional campaign. This paper describes an effort to measure the success of a marketing campaign by using a quasi-experimental approach to measure the incremental participation or "lift" of the campaign and provide feedback to marketing and program staff. We report on the design, results, and key lessons learned including: 1) how to assess the performance of promotional campaigns using a quasi-experimental lift study; 2) key

assumptions to consider when designing a lift study; and 3) challenges associated with rapidly assessing the effects of a promotion.

## Background

There is evidence that customer reward programs can influence consumer purchase behavior and increase customer loyalty towards a store, brand, or a service (Uncles, Dowling, and Hammond, 2003; and Yuping, 2007). Although many for-profit companies rely routinely on reward or loyalty programs to support their marketing efforts, recently an energy program administrator in Ontario, Canada—the Independent Electricity System Operator (IESO), formerly known as the Ontario Power Authority—tapped a very popular Canadian consumer rewards program called the AIR MILES Reward Program (AMRP) to help promote their consumer-oriented energy efficiency programs.

In October 2013, the IESO initiated a study to estimate the impacts of a new promotional campaign called "saveONenergy$^{OM}$ AND BE REWARDED" (launched in June 2013) on participation in three consumer programs: saveONenergy *peaksaver* PLUS®, saveONenergy Fridge & Freezer Pickup, and saveONenergy Heating & Cooling Incentive. The campaign's goal was to increase participation in these programs through the AMRP. AMRP members are referred to as AIR MILES Collectors.

AIR MILES Collectors were sent targeted emails describing the IESO promotion and instructions for participating. Consumers then registered for the AMRP IESO promotion, participated in one or more of the three programs, and received AIR MILES Reward Miles as an incentive. AIR MILES Collectors could earn 50 to 100 AIR MILES Reward Miles for participating in each of the eligible programs.[1] Participants received the AIR MILES Reward Miles in addition to the IESO-provided financial incentives for participation.

## Methodology

### Study Design

Researchers often use statistical models to assess the effectiveness of marketing. Leeflang et al. (2009), for example, note that until the mid-1990s, econometric regression-based models were the most common approaches to analyzing marketing effects. As the decade progressed, time-series models became commonplace, and, presently, researchers are expanding the use of Bayesian type models. Although modeling can be a powerful technique for estimating marketing impacts, for this study, the authors opted to use a quasi-experimental design approach to quantitatively assess the effectiveness of the saveONenergy AND BE REWARDED campaign rather than use a more traditional modeling approach. A major benefit of the quasi-experimental design approach was that it allowed the authors to design a study that leveraged the IESO's ongoing tracking survey and in principle, provide the IESO with faster feedback regarding the effectiveness of the promotional campaign.

Over the past several years, the IESO has been fielding a web-based, longitudinal general population survey, known as the Triple-A Survey, to track and monitor awareness of and participation in the IESO's consumer-facing conservation programs or saveONenergy programs among Ontario households. The survey provided an efficient approach for implementing a quasi-experimental design to assess the saveONenergy AND BE REWARDED promotional campaign.

Measuring the promotional lift in participation requires a baseline or control against which to compare participation rates of a group targeted by the promotion (this is the key element of the quasi-experimental design). We assumed the promotional campaign had a well-defined target group—AIR

[1] AIR MILES can be redeemed for various products and services in Canada, and one reward mile is worth about 10 cents.

MILES Collectors—that would enable us to use a quasi-experimental approach to measuring promotional lift, using AIR MILES Collectors as the target group and non-AIR MILES Collectors as the baseline group.

We used the following assumptions to design our sampling approach for this project:

- The annual average participation rates between 2011 and 2012 among Triple-A Survey respondents for the three targeted programs (estimated at 2.4%–3% depending on the program) would approximate the baseline participation rates for 2013.
- The percentage of AIR MILES members in Ontario and among Triple-A Survey respondents was approximately 70%, based on 2011-2012 Triple-A Survey data.
- Program participation rates for both AIR MILES Collectors and non-AIR MILES Collectors were approximately equal.
- As part of its planning for the promotional campaign, IESO estimated the lift in participation due to the promotion at 10% for the peaksaver PLUS, 7% for the Fridge & Freezer Pickup, and 1% for the Heating & Cooling Incentive Program.

Based on these assumptions, we designed the study with a goal of completing 2,000 surveys (1,000 AIR MILES Collectors and 1,000 non-AIR MILES Collectors) to provide sufficient sample sizes for statistical analysis.[2] Because of the high incidence of AIR MILES Collectors throughout Ontario, we oversampled the non-collector audience, but in the analyses below, we applied sample weights[3] to correct for the over-representation of non-AIR MILES Collectors.

After initial data collection, we learned that non-AIR MILES Collectors could have been exposed to the saveONenergy AND BE REWARDED promotional advertising. This complicated our original study design that compared participation of non-AIR MILES Collectors and AIR MILES Collectors, and suggested that our definition of those who were exposed to the saveONenergy AND BE REWARDED campaign was incomplete. As a result, we added survey questions to identify respondents who were aware and unaware of the promotion, and redefined the baseline group to include AIR MILES Collectors unaware of the promotion as well as unaware non-collectors (**Figure 1**).

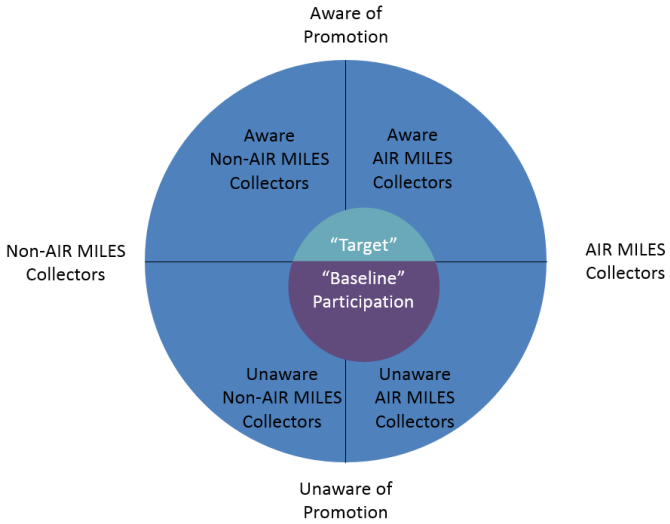


**Figure 1.** Target and Baseline Research Groups[4]

[2] The required minimum sample sizes for the target and baseline groups was 14 in order to have enough statistical power to determine statistically significant differences. If the estimated low-end participation rate of 2.4% in 2011-2012 was the same in 2013 and if participation rates are similar between AIR MILES collectors and non-collectors, the survey of 1,000 sample members in each group should have resulted in 24 participants in each group.

[3] The sample weights assume a 70:30 ratio of AIR MILES collectors to non-AIR MILES collectors in the Ontario population.

[4] The inner circle in the figure is deliberately offset to show the relative proportions of respondents in the two groups.

## Survey Questionnaire Design

We inserted several questions about the saveONenergy AND BE REWARDED promotion into the Triple-A Survey questionnaire. We used these questions to determine whether a respondent was an AIR MILES Collector, was aware of the promotion, and whether they had registered to participate and/or had participated in one or more of the eligible programs through the saveONenergy AND BE REWARDED promotion website. **Figure 2** displays the inserted questions and our approach for identifying the baseline and target groups.

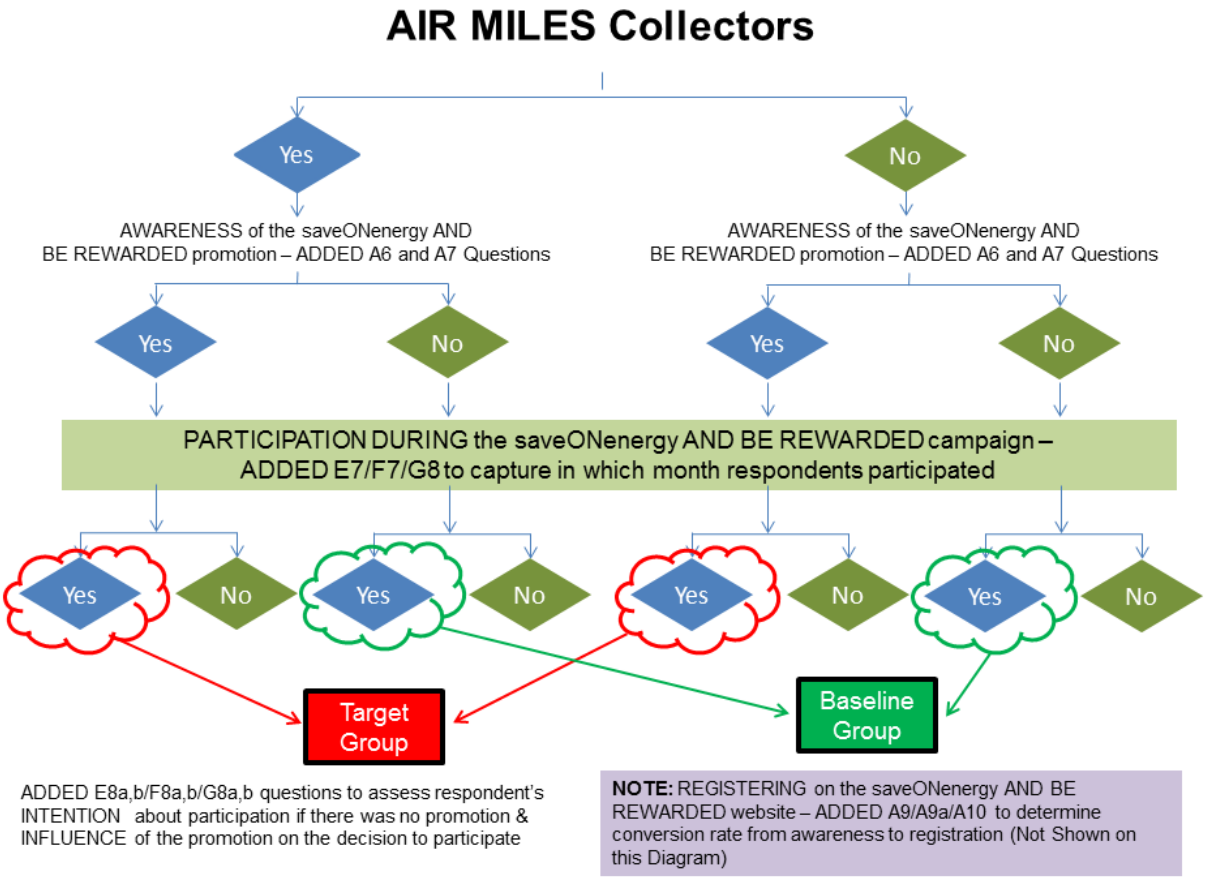


**Figure 2.** Question Flow Diagram for Identifying Target and Baseline Groups

## Lift and Percent Lift Estimation Method

To measure the impact of the promotional campaign on participation we calculated the "lift" for each program, which is the difference in participation rates between total participants and baseline participants during the promotional period (June-December 2013) (**Figure 3**).[5] We then calculated the "percent lift", or the percentage of change in the participation rate due to the lift, to indicate the magnitude of the lift in participation.[6]

[5] Lift = total participation rate – baseline participation rate
[6] Percent lift = [(total participation rate – baseline participation rate) / baseline participation rate] * 100

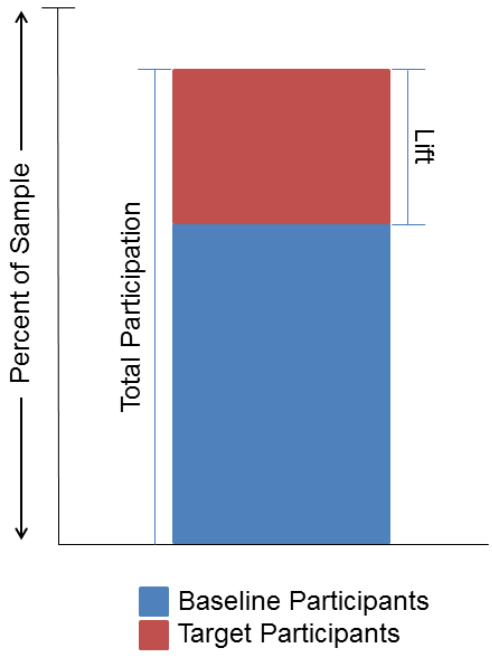


**Figure 3.** Illustration of Lift

## Results—Initial 2013 Data Collection

We fielded the survey between October 21, 2013 and December 1, 2013. As noted previously, we completed surveys with 1,000 AIR MILES Collectors and 1,000 non-AIR MILES Collectors (**Table 1**) and applied sample weights to account for the over-representation of non-AIR MILES Collectors in the sample.

**Table 1.** 2013 Survey Completes by Group[7]

| | **Air Miles Collectors** | **Non-Air Miles Collectors** |
|---|---|---|
| Triple-A Survey Respondents (unweighted) | 1,000 | 1,000 |
| Triple-A Survey Respondents (weighted) | 1,400 | 600 |

Demographically, we found that AIR MILES Collectors and non-collectors were similar—within three percentage points—in regards to gender, age, education, income, employment status, and household size. We noted small demographic differences between the AIR MILES Collectors and non-collectors: collectors are likely slightly older and have slightly higher levels of education and income than non-collectors. These differences are consistent with our understanding of the AIR MILES Collector population in Ontario.

In addition, we found that one quarter of AIR MILES Collectors and 12% of non-collectors reported awareness of the saveONenergy AND BE REWARDED with AIR MILES promotion before they participated in any of the programs. Overall, 37% of the sample were aware (target group) and 63% were unaware (baseline group) of the promotion.

During fielding we did not set quotas for the number of participants in the targeted programs during the promotional campaign because participation was the metric we used to gauge the effectiveness of the

[7] Weighted counts of respondents are reported in subsequent data tables.

promotional campaign. **Table 2** displays the count of Triple-A Survey respondents who participated in each of the three IESO programs following the launch of the promotional campaign in June 2013 through the end of the initial data collection on December 1, 2013.

We were unable to calculate the promotional lift in participation because our sample sizes in the target and baseline groups were too small to provide sufficient statistical power (0.80 or higher) to reject our null hypothesis that the promotion did not result in a lift in participation. The statistical power we achieved ranged from 0.47 for the Fridge and Freezer Pickup program to 0.68 for the Heating and Cooling Incentive program. We needed a sample size of at least 14 in each of the target and baseline groups and, as shown in **Table 2**, only the baseline group for the Heating & Cooling Incentive program met this criterion.

**Table 2.** Number of Survey Respondents Who Participated in Each IESO Program During the Initial Data Collection Period (June 1, 2013 to December 1, 2013)

| **Program** | **Aware Respondents (Target Group)** | | | **Not-Aware Respondents (Baseline Group)** | | |
|---|---|---|---|---|---|---|
| | **AIR MILES Collectors** | **Non-AIR MILES Collectors** | **Total** | **AIR MILES Collectors** | **Non-AIR MILES Collectors** | **Total** |
| peaksaver PLUS | 9 | 2 | 11 | 7 | 1 | 8 |
| Fridge & Freezer Pickup | 3 | 2 | 5 | 8 | 1 | 9 |
| Heating & Cooling Incentive | 8 | 0 | 8 | 19 | 6 | 25 |

## Results—2013–2014 Combined Data Collection

Because we were unable to estimate lift with the data we collected in 2013 with sufficient statistical rigor, we inserted the three core survey questions needed to estimate lift into the 2014 Triple-A Survey, fielded between April 1, 2014 and December 15, 2014. This enabled us to continue tracking awareness of the AIR MILES promotion and participation in the three consumer programs.

However, since we adjusted the baseline to include respondents unaware of the promotion in the 2013 analysis, as opposed to non-AIR MILES Collectors, we did not oversample non-AIR MILE Collectors in the 2014 data collection (**Table 3**). The 2014 survey resulted in nearly twice as many respondents than the 2013 survey. In addition, we applied weights to adjust for population differences across Ontario's utility districts in the analyses below.

**Table 3.** Survey Respondents by Group

| | **AIR MILES Collectors** | **non-AIR MILES Collectors** | **Total** |
|---|---|---|---|
| 2014 Triple-A Survey Respondents (weighted) | 3,428 | 320 | 3,748 |
| 2013 and 2014 Triple-A Survey Respondents Combined (weighted) | 4,828 | 920 | 5,748 |

The percentage of AIR MILES Collector respondents who reported awareness of the saveONenergy AND BE REWARDED with AIR MILES promotion in 2014 is significantly higher than in 2013, indicating that awareness increased over time and consistent with aims of the promotion (**Table 4**). In contrast, awareness among non-AIR MILES Collectors declined significantly from 2013 to 2014,

also consistent with the campaign's primary emphasis on targeting AIR MILES Collectors. Overall, during the combined 2013–2014 data collection period, 39% of respondents reported awareness (target group) and 61% reported being unaware (baseline group) of the promotion.

**Table 4.** Percentage of those in the Survey Sample Who Were Aware of the saveONenergy AND BE REWARDED Promotion in 2013, 2014, and 2013-2014

| **Description** | **AIR MILES Collectors (n=3,428)** | **non-AIR MILES Collectors (n=320)** |
|---|---|---|
| Aware of the promotion in 2013 | 25% | 12% |
| Aware of the promotion in 2014 | 31%[a] | 7%[b] |
| Aware of the promotion in 2013-14 | 29% | 10% |

a 2013 Collectors (n=350/1400) vs. 2014 Collectors (n=1063/3428): z=4.162, p<0.01
b 2013 Non-Collectors (n=72/600) vs. 2014 Non-Collectors (n=22/320): z=-2.445, p<0.05

The addition of the 2014 respondents resulted in a large enough number of participants in the target and baseline groups to achieve the level of statistical power required to conduct statistical analyses (**Table 5**).

**Table 5.** Total Number of 2013 and 2014 Survey Respondents That Participated in Each IESO Program During the Promotion

| **Program** | **Aware Respondents (Target Group)** | | **Not-Aware Respondents (Baseline Group)** | |
|---|---|---|---|---|
| | **AIR MILES Collectors** | **non-AIR MILES Collectors** | **AIR MILES Collectors** | **non-AIR MILES Collectors** |
| peaksaver PLUS | 49 | 2 | 54 | 2 |
| Fridge & Freezer Pickup | 25 | 2 | 26 | 2 |
| Heating & Cooling Incentive | 73 | 0 | 74 | 9 |

## Lift and Percent Lift

With the additional survey responses, our estimates of promotional lift for each program were statistically significant (**Table 6**). However, with the exception of the Heating & Cooling Incentive, the participation rates in the two other programs, even with the additional sample, were less than we had assumed when designing the initial lift study.

**Table 6.** Survey Respondent Participants in Baseline and Target Groups, and Lift in Participation Rate due to the saveONenergy AND BE REWARDED Campaign (June 2013–December 2014)[8]

| Program | #Total Participants of the # in Sample | Percent of Total Participants | # Baseline Group Participants of the # in Sample | Percent of Baseline Group Participants | Lift (Percent of Target Group Participants) |
|---|---|---|---|---|---|
| peaksaver PLUS | 107 of 4,931 | 2.17% | 56 of 4931 | 1.14% | 1.03%[a] |
| Fridge & Freezer Pickup | 55 of 5,730 | 0.96% | 28 of 5,730 | 0.49% | 0.47%[b] |
| Heating & Cooling Incentive | 156 of 5,698 | 2.74% | 83 of 5,698 | 1.46% | 1.28%[c] |

a $p \leq .001$; power = 0.96; 95% confidence interval for percent of total participants: 1.8% to 2.5%
b $p \leq .001$; power = 0.85; 95% confidence interval for percent of total participants: 0.7% to 1.2%
c $p \leq .001$; power = 0.97; 95% confidence interval for percent of total participants: 2.3% to 3.2%

We used the lift results above to calculate the percent lift, or the percentage increase in the participation rate, in program participation between June 2013 and November 2014 attributable to the saveONenergy AND BE REWARDED promotion. We found that the percent lifts were consistent across the programs and resulted in nearly double the participation than would have occurred without the promotion (**Table 7**). In comparison with the initial 2013 estimates, the combined 2013–2014 percent lift declined for peaksaver PLUS but increased substantially for the other two programs and are all reasonably similar to one another suggesting that the promotion did not differentially influence participation in the programs.

**Table 7.** saveONenergy AND BE REWARDED Campaign Percent Lift Statistics (June 2013–December 2014)[9]

| Program | Percent of Baseline Group Participants | Percent of Target Group Participants | Percent Lift |
|---|---|---|---|
| peaksaver PLUS | 1.14% | 1.03% | 90.35% |
| Fridge & Freezer Pick-Up | 0.49% | 0.47% | 95.92% |
| Heating & Cooling Incentive | 1.46% | 1.28% | 87.67% |

## Lessons Learned

Although we can conclude the saveONenergy AND BE REWARDED promotional campaign was, indeed, successful in significantly lifting participation in the three targeted programs, the study also produced several lessons learned regarding the design and execution of lift studies that we believe are valuable to the broader community of energy program administrators, marketers, and evaluators.

[8] Lift (Percent of Target Group Participants) = Percent of Total Participants – Percent of Baseline Participants.
[9] Percent Lift = Percent of target group participants / percent of baseline group participants * 100.

**Assumed program participation rates are a critical study design parameter.**

In the design of the initial lift study, we assumed average program participation rates derived from historical annual data, which ranged from 2.4%–3% across the programs, to determine the sample size for the survey. As we reported, actual program participation during the initial 2013 study was lower than expected, between 0.7% and 1.7%. Consequently, we did not have a large enough sample of program participants to measure promotional lift with satisfactory precision. During further analysis, we realized that designing promotional lift studies requires more granular estimates of program participation, which are relevant to the planned time period of the promotional campaign.

We analyzed actual program participation in the Heating & Cooling Incentive and Fridge & Freezer Pickup programs using data available through the program databases. **Figure 4** shows that participation in the Heating & Cooling Incentive, for example, tapered off during the last quarter of 2013 (when the original survey was in the field) before rebounding again in early 2014. Moreover, participation was generally higher in 2014 than in 2013. The chart also suggests there may be, in fact, considerable intra-annual variation in program participation. A similar result is evident in the participation data for the Fridge & Freezer Pickup program (results not shown). The primary point, though, is that although the lift methodology is a powerful technique for quantifying the effects of promotional campaigns, the design of lift studies is sensitive to the assumptions used, especially program participation rates, which are not constant and may, in fact, have seasonal trends.

As we noted in this study, overestimating program participation can lead to sample sizes that are too small to produce statistically meaningful results. On the other hand, underestimating participation rates, although less risky from an analytical point of view, can increase study costs.

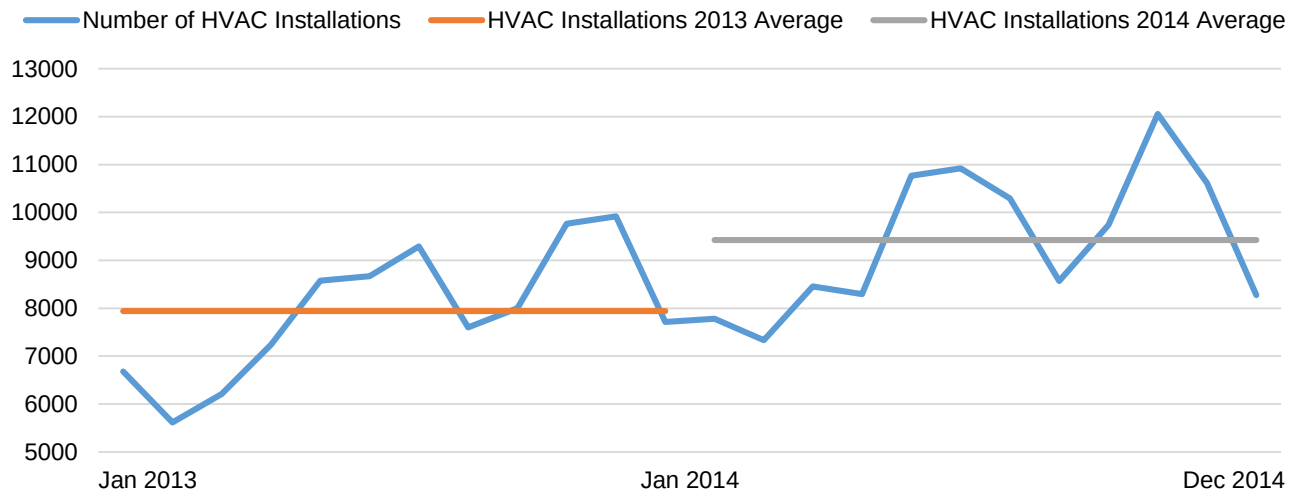


**Figure 4.** Number of Program Participants in the Heating & Cooling Incentive, January 2013–December 2014

**Define target and control groups based on awareness of the promotion.**

To accurately measure promotional lift, clearly defined target and control groups are essential. We initially believed that only AIR MILES Collectors would be exposed to the promotion through targeted emails to collectors. Thus, we assumed these consumers were the target group for the lift study. However, during the course of our research, we learned that although AIR MILES Collectors were the primary target for the promotion, non-AIR MILES Collectors were also exposed to the campaign through other channels

such as the IESO Call Centre and the saveONenergy website. Moreover, non-AIR MILES Collectors who visited the registration website were encouraged to join and become AIR MILES Collectors to participate in the campaign and receive the incentive. We realized that even though AIR MILES Collectors were, indeed, the primary target for the promotional campaign, it is difficult to control how the advertising is implemented and who is actually exposed to the promotion.

Consequently, we redefined our comparison groups to those aware and unaware of the promotion to more accurately measure the promotional lift of the campaign (**Figure 1**). Consumers unaware of the promotion were the control group, and consumers aware of the promotion were the target group. Had we not made this adjustment to the comparison groups, we would have underestimated lift by including in the baseline group respondents who were exposed to and aware of the promotion but who were not AIR MILES Collectors. Redefining our comparison groups also resulted in different samples sizes than we originally planned. We anticipated 1,000 respondents in the control group and 1,000 in the target group, but our redefinition of the groups resulted in 1,576 in the control group and 424 in the target group. However, because participation rates for the target group were higher than for the control group, this did not result in large discrepancies in the number of participants in each group. Had participation rates been equal between the redefined control and target groups, we would have obtained a much larger number of control group participants compared to treatment group participants.

**Awareness of the promotion is a first step towards participation, and awareness takes time.**

The general theory behind promotional campaigns for energy efficiency programs is an assertion that before you can motivate a consumer to participate in a program, you must first make them aware of the program by promoting it (Randazzo & Peters, 2011). Using data from the Heating & Cooling Incentive program as an example, our results show that it takes time to increase awareness of the promotion in a target population (**Figure 5**). Awareness of the AIR MILES promotional campaign was relatively low during the initial data collection period in October 2013, which suggests that even though the promotional campaign was launched several months earlier, consumers required repeated advertising impressions before becoming truly aware of the campaign and the opportunity to participate in the saveONenergy programs. In 2014, awareness of the campaign steadily increased throughout the year, coincident with the increase in Heating & Cooling Incentive participation reported by survey respondents. Although other factors also affect participation, increased awareness is an important precursor.

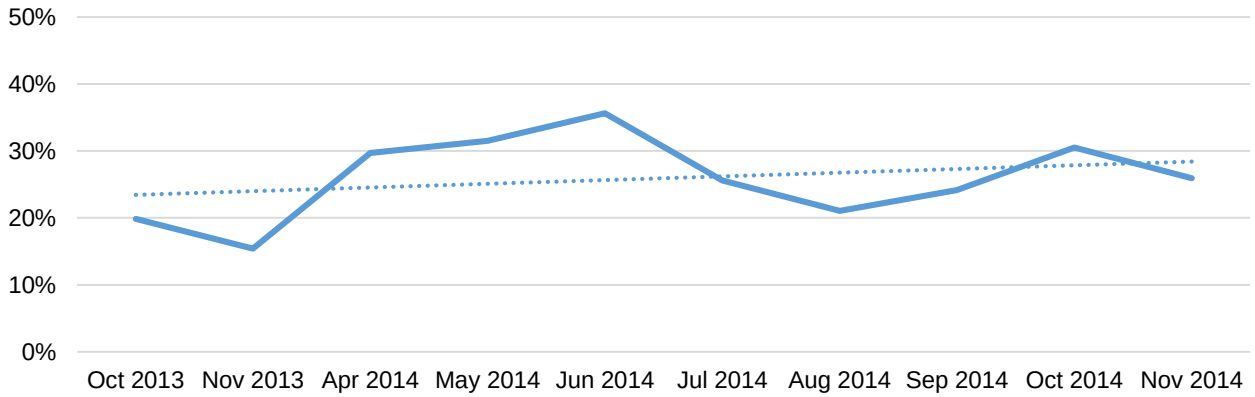


**Figure 5.** Percentage of Triple-A Survey Respondents who Reported Awareness of the saveONenergy AND BE REWARDED with AIR MILES Promotion[10]

[10] Percent aware data from responses to the Triple-A Survey fielded in October–November 2013 and April–November 2014.

**Promotion of involved and expensive program-related behaviors is hard and takes time.**

In contrast with a promotion that encourages a consumer to "participate" by purchasing a relatively simple product like a CFL bulb, some energy efficiency programs require considerable effort and/or expense on the part of the consumer. For example, to participate in one of the promoted programs—the saveONenergy Heating & Cooling Incentive, a consumer must identify and engage with an HVAC contractor affiliated with the program, purchase a qualifying piece of equipment for his or her home, and have the equipment installed. Although in both situations a consumer may be motivated to participate because they have a need (e.g., a bulb or furnace unit failed), clearly participating in the HVAC program takes more effort and time. All other things being equal, it stands to reason that the time and effort needed to promote such a program should be commensurate with the time and effort required to participate. The same reasoning applies to the time and effort needed to measure the effects of a promotion using a lift study. Measuring the lift following the promotion of a program requiring less effort to participate (e.g., purchasing a CFL bulb) should take less time than a study to measure promotional lift of a program for which the participation demands are considerably higher (e.g., the saveONenergy Heating & Cooling Incentive). When planning promotions (and lift studies to measure the effects of promotions), it is important to consider the time and effort required to participate in a program and factor that into the design of the study.

In some cases, it may be possible to measure promotional lift more quickly by investing more resources and budget to recruit and survey additional participants. For this project, we determined, in hindsight, that we would have needed to nearly triple the initial 2013 survey sample size to yield enough survey completes to obtain responses from enough participants to achieve adequate statistical power during our analysis. Obviously, a sample size change of this magnitude would have had a major effect on the project budget, and it would have imposed severe logistical challenges to acquire sufficient sample to complete the initial survey. Fortunately, despite the less than wholly satisfactory initial results, we were able to easily (and inexpensively) extend survey data collection by inserting three questions into 2014 Triple-A Survey tracking study, which the IESO had already planned for and budgeted, thus eliminating the need for additional funding and resources. Nevertheless, this experience underscores the importance of establishing a clear timeframe for measuring promotional lift and assessing the performance of a targeted campaign.

In summary, the promotional lift methodology implemented using a quasi-experimental design is an effective approach for quantitatively assessing the performance of marketing and promotional campaigns. Using clearly defined comparison groups, the method is conceptually straightforward, flexible, and can be adapted for different types of program promotions. Nevertheless, the details of executing a lift study need to be carefully considered, but overall, we believe the promotional lift methodology is powerful tool that program and marketing staff can use to assess and evaluate promotional campaigns for energy efficiency programs.

## Acknowledgements

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