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Greer Gosnell, Stefano Carattini and Alessandro Tavoni

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Observing the Unobservable: A Field Experiment on Early Adopters of a Climate-Friendly Behavior

Greer Gosnell*, Stefano Carattini[†], Alessandro Tavoni[‡]

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Abstract

Encouraging rapid and widespread adoption of non-normative climate-friendly behaviors represents a crucial challenge for practitioners and policymakers alike, and a new frontier in the transition to a greener economy. Yet, several such behaviors are unobservable and undertaken privately. We devise a novel approach that makes household renewable energy use visible to peers through yard signs and window clings, thus creating social rewards for early adopters and sending a signal within their communities. We implement a field experiment comprising over 20,000 customers of a renewable energy utility in the United Kingdom and find that a significant proportion are intrinsically motivated to put their invisible climate-friendly behavior on display. Indeed, participation and display are identical across treatments with and without a financial incentive.

*Grantham Research Institute, London School of Economics and Political Science; The Payne Institute for Public Policy, Colorado School of Mines. Corresponding author: ggossnell@mines.edu

[†]Georgia State University; CESifo; London School of Economics and Political Science; University of St. Gallen

[‡]University of Bologna

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1 Introduction

The transition toward a clean energy economy to stabilize the global climate incontrovertibly requires rapid and widespread adoption of climate-friendly behaviors and technologies. While ambitious top-down climate policies that deliver economic incentives for behavioral change are necessary for a successful transition, leveraging individuals’ prosocial proclivities is key for supporting it, especially with the relatively slow pace of top-down policy implementation.

Recent research suggests that there is more cooperation in the climate commons than economists generally assume (Carattini et al., 2019). Local social norms tend to drive (conditionally) cooperative behaviors in global social dilemmas, as notably evidenced in local dilemmas (Ostrom, 1990). Hence, behavioral interventions may be geared to capitalize on such norms and guide behaviors toward greener decisions. A growing body of research uses behavioral interventions that rely on social comparison to promote energy conservation among households (see Schultz et al., 2007 and Allcott, 2011 for two prominent studies). Following Cialdini (2003), these studies combine descriptive norms that highlight the energy conservation efforts of neighbors, and injunctive norms that remind households about the socially preferred level of energy consumption. These social interventions have been successful in reducing households’ energy consumption by approximately 2-4% (Buckley, 2020).

However, a more difficult task—one the literature has only recently considered—remains in transitioning behaviors from non-normative to normative. In the case of low behavioral adoption, unless one resorts to deception (e.g., Lindman et al., 2013), standard descriptive norms are unlikely to be effective, if not detrimental. For instance, informing households that a small minority of their neighbors have adopted renewable energy plans or taken particular energy efficiency and conservation measures is unlikely to motivate further adoption.

Nevertheless, increasing the uptake of as yet non-normative behaviors is crucial to transition to an environmentally sustainable path. In this paper, we present and test a novel approach to foster the diffusion of climate-friendly behaviors with low levels of adoption. Our approach builds on three self-evident or empirically evidenced observations. First, many non-normative climate-friendly behaviors—such as carbon offsetting, switching to renewable or flexible energy plans, or abstaining from flying—are “socially invisible”. Second, people are more likely to undertake prosocial behaviors if they can be seen doing so by others and, therefore, reap social rewards (Bénabou and Tirole, 2006; Yoeli et al., 2013; Sexton and Sexton, 2014). Third, the more visible is a given behavior, the faster it tends to spread through social contagion (Bollinger and Gillingham, 2012; Narayanan and Nair, 2013; Baranzini et al., 2017).

In a large-scale field experiment, we identify an otherwise invisible climate-friendly behavior—the adoption of renewable energy tariffs—and allow households to publicize it using yard signs and window clings. To implement the experiment, we partnered with a 100% renewable energy utility (“Utility” hereafter) in England and Wales and randomly selected 3,320 regions (“postcode sectors”) containing 20,648 customers (of the eligible 6,671 regions with 74,534 customers) to be assigned to control and treatment arms. Using a fractional factorial design with region-level randomization, we assigned

customers to five groups that varied along two dimensions: (i) eligibility to receive materials whose display is incentivized or not, and (ii) the content of their invitation to participate in our program.

The first dimension allowed some households to receive a material showcasing the household’s adoption of a renewable energy tariff. The material either contained a financial incentive to display it, or contained no such incentive. This incentive took the form of a £50 referral bonus per customer referred using the unique promotional code on one’s displayed material. The second dimension varied the information provided in the email invitation to participate in our program, where participation entails opting in to the program via submission of a brief informed consent survey. In particular, we tested whether participation in the program increased when the invitation highlighted various features of the treatment, namely the opportunity to receive a yard sign or window cling, and whether there was a financial incentive to display the material. Ten months after sending the invitations and seven months after distributing the materials, we surveyed participants through a debrief questionnaire to understand the motives that led them to display the signs and clings, as well as to measure displaying behavior.

Our study led to three main findings. First, a significant proportion of individuals were intrinsically motivated to display their pro-environmental behavior via the offered materials, regardless of the prospects for financial gains.¹ Second, participants followed through and displayed their materials, again irrespective of the financial incentive. Around 80% of participants who received signs or clings and took our debrief survey reported having subsequently displayed their materials. Third, a large majority of the sample reported that the main reason for displaying was to encourage others to adopt, demonstrating a drive to act as front runners and influence others to follow suit.

Our findings carry important policy implications. For instance, practitioners and policymakers may tap into the intrinsic motivation of prosocial citizens to increase awareness of the availability and appeal of socially desirable behaviors, which may in turn lead to further adoption. Hence, practitioners and policymakers interested in generating higher adoption of non-normative behaviors may consider more varied and cost-effective means of achieving large-scale behavioral shifts than purely economic incentives, particularly if the channels for visibility require minimal material costs (e.g., in the case of online sharing features). Furthermore, our initiative illustrates that many early adopters strongly welcome the opportunity to make their behavior visible. Thus, early adopters may be willing to play a key role in spreading prosocial behavior, increasing the success of interventions even when the descriptive norm is still low. Finally, our findings raise an important question for future research regarding whether people are more likely to adopt a climate-friendly behavior when they know that they may have the opportunity to earn social rewards from doing so.

These findings contribute to several strands of literature. First, they expand upon a recent theoretical and empirical literature that studies innovative ways to transition

¹Customers could be driven to display their material due to a prosocial and/or signaling motive. For instance, if the motivation for displaying is to increase renewable energy adoption for environmental reasons, the individual is prosocially motivated. If one displays for reputational (or internal moral consistency) reasons, then the individual engages in social (self) signaling. Motivational crowding would thus only be applicable in the case of prosocial motivation and/or perceived prosocial motivation by one’s peers. We explore these motivations in section 3.3.

from as yet non-normative to normative behaviors (Jacobsen et al. 2013; Kraft-Todd et al. 2015; Catalini and Tucker 2017; Sparkman and Walton 2017; Bicchieri and Dimant 2019; Mortensen et al. 2019; Spencer et al. 2019; Andreoni et al. 2020; Carattini and Blasch 2020; Carattini et al. 2021). Second, they contribute to a broader literature that uses behavioral interventions to spur pro-environmental behavior (see Buckley 2020 for a review). Third, they expand the research that analyzes the adoption of renewable energy tariffs and its drivers (e.g. Clark et al. 2003; Kotchen and Moore 2007; Jacobsen et al. 2013). Finally, the above findings add to an established literature that examines the role of social rewards—and indirect reciprocity, in particular—in driving prosocial behavior (including pro-environmental choices) both in the lab and in the field (Nowak and Sigmund 1998; Wedekind and Milinski 2000; Andreoni and Petrie 2004; Rege and Telle 2004; Haley and Fessler 2005; Andreoni and Bernheim 2009; Ariely et al. 2009; Rand et al. 2009; Griskevicius et al. 2010; Yoeli et al. 2013).

The remainder of the paper is organized as follows. Section 2 describes our research design and data. Section 3 provides our empirical results. Section 4 concludes and draws implications for policy and future research.

2 Research Design

2.1 Sample

Our approach relies on identifying and leveraging the enthusiasm of early adopters to improve the visibility of non-normative behaviors that may become more popular with greater observability or increased awareness via social channels (see Wolske et al., 2020, for a review). To this end, we partnered with a leading renewable energy supplier in England and Wales to conduct a field experiment with their customers. Our partner’s mission combined with energy prices and customer acquisition data indicate that these customers are engaged in the energy market and have relatively strong environmental preferences (see Gosnell, 2018 for further details).²

At the time of randomization, the entire eligible population of customers included 74,534 households. Eligibility criteria at the household level required that subjects have an email address on file and either an electricity-only or dual-fuel (i.e. gas and electricity) account; gas-only customers were ineligible to participate. The Utility consented to randomly select 20,648 customers for participation in the experiment and assign them to treatment arms, based on the power calculations provided in Table A.2.

Randomization occurred at the postcode sector level, such that all customers in the same postcode sector were assigned to the same treatment, to prepare for potential further studies using spatial data.³ Starting from 6,671 postcode sectors—i.e. all postcode

²Allcott (2015) highlights the risk of ‘site selection bias’ in making out-of-sample predictions. Our research intentionally investigates a select sample of early adopters within an environmentally progressive utility, and we do not intend for these results to generalize to later adopters. Early adopters are indeed the main focus of our research and a key resource, we argue, for practitioners and policymakers to stimulate behavioral change. See Appendix C for further discussion.

³A postcode sector is a relatively small geographical unit in the United Kingdom. It includes the outward code (the part of the postcode before the space), and the first digit of the inward code, e.g. “SE13 7”. On average, there are about 7,384 residents in a postcode sector, and there are over 11,000 postcode sectors in the United Kingdom.

sectors with at least one eligible Utility customer as of February 2019, thus representing the customer population of 74,534 households at the time of randomization—we randomly selected 3,320 postcode sectors, equivalent to a sample size of 20,648 customers. In February 2019, there were six customers on average in each eligible postcode sector.

Our recruitment approach involved contacting customers via emails with experimentally varied content (as described in Section 2.2) to invite them to participate in our research initiative. Of the 20,648 households emailed, 3,949 (19%) signed up to participate. Among participants, fewer than 3% ultimately attrited from the study.

2.2 Experimental Design

Postcode sector-level assignment to receive materials—with or without financial incentives to display them—constitutes the first level of randomization. Specifically, we first assigned randomly selected postcode sectors to one of three conditions: a control condition receiving no materials (Control), a first treatment condition receiving materials with no incentive for their display (Display), or a second treatment condition receiving materials with incentives for their display in the form of a £50 referral bonus for each new customer recruited using the promotional code on the participant’s display material (Incentivized Display). That is, those in the Incentivized Display treatment only received the referral bonus if their referral code was used, whereas those in the Display treatment never received the referral bonus, even if their referral code was used. With either treatment, the referee, i.e. any individual who switched to Utility using a project-specific referral code, received the standard £50 referral bonus.

Individuals in Display and Incentivized Display received either a yard sign or a window cling depending on whether they lived in a detached home, semi-detached home, or ground-floor flat (sign assignment), or a terraced home or apartment building (cling assignment).⁴ Signs and clings appear as in Figure 1.

The second level of randomization in the fractional factorial design varies the information provided—and, thus, motivations triggered—during the initial recruitment of participants.⁵ Within each of the two treated groups, a randomly selected half received a recruitment email that detailed the intervention to which they had been assigned, while the other half received a recruitment email that provided no information on the intervention (identical to the email sent to the Control group; see emails

⁴Upon consent provision, participants selected their dwelling type from a list of options, representative of housing types in the United Kingdom (i.e. flat - ground floor, flat - not ground floor, terraced home, detached/semi-detached home, cottage/bungalow, other). For those in flats that are not on the ground floor, we asked a follow-up question regarding the floor of their flat (basement, 1, 2, 3, 3+). We accommodated a handful of individuals who emailed the project email address to request the alternative display material.

⁵Note that, in compliance with the European Union’s General Data Protection Regulation (GDPR), all customers—even those in the Control group—received an invitation to participate in our program, though those in the Control group were solely invited to participate in our study debrief survey and did not receive any information about the materials sent to treated participants. Note also that a third source of exogenous variation assigned a minority of postcode sectors to the possibility of a one-off ‘monitoring session’ for measurement of compliance, which simply included an additional line in the one-page information sheet linked in the consent survey notifying the participants that we may receive their address data from the Utility, a process also required under GDPR. The outcome of the monitoring exercise was generally in line with self-reported adoption, which we discuss in section 3.

in Appendix F). Therefore, using a stratified randomization procedure,⁶ we randomly allocated 3,320 eligible postcode sectors to be in one of the five groups in Table 1, resulting in the allocation shown in Figure 2. We sent recruitment emails across four waves (two recruitment emails per week over two weeks), with 166 postcode sectors per group-wave.⁷

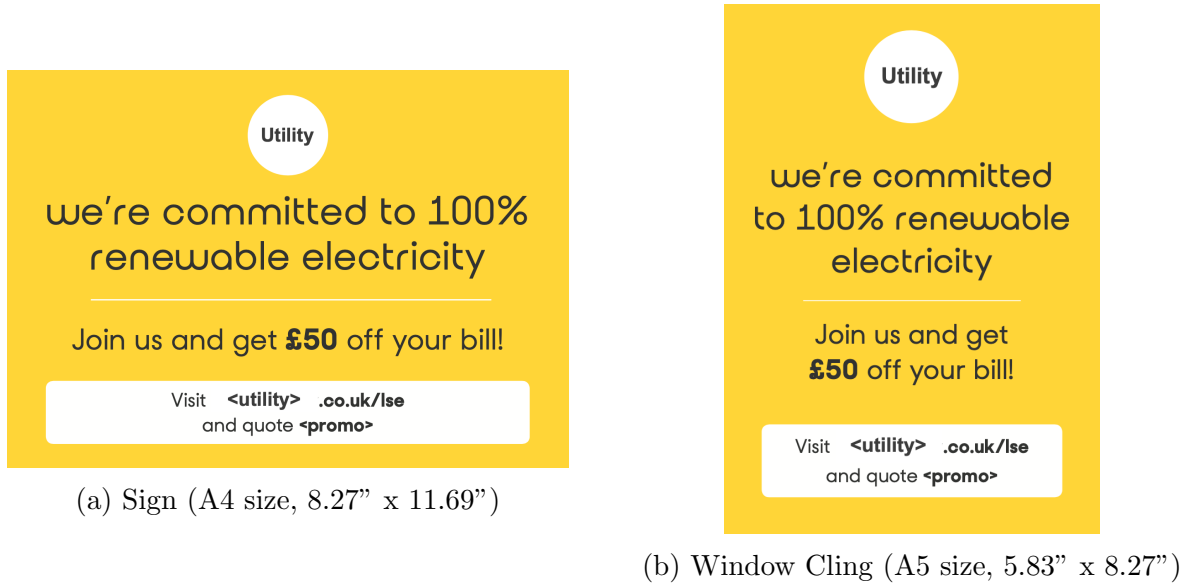


Figure 1: Treatment Materials

Table 1: Assignment of Postcode Sectors to Treatment

	Consent Email		
	Control	Display	Incentivized Display
Control (n=664)	664	-	-
Display (n=1,328)	664	664	-
Incentivized Display (n=1,328)	664	-	664

⁶In order to control for unobserved variability, our stratified randomization sorts all eligible postcode sectors into blocks according to number of customers per 1,000 residents, share of the population classified as urban, and share of energy accounts in the postcode sector linked to suppliers of varying levels of renewable energy in their fuel mix.

⁷We implemented the recruitment in four waves to ensure that we did not over-subscribe beyond our budget constraints, as determined by the cost of producing and delivering yard signs and window clings. Our anticipated participation level was fairly accurate, so that we were able to complete all four waves. All waves took place between March 5-15, 2019, with reminder emails sent between March 12-22, 2019. We sent a final reminder on April 4, 2019.

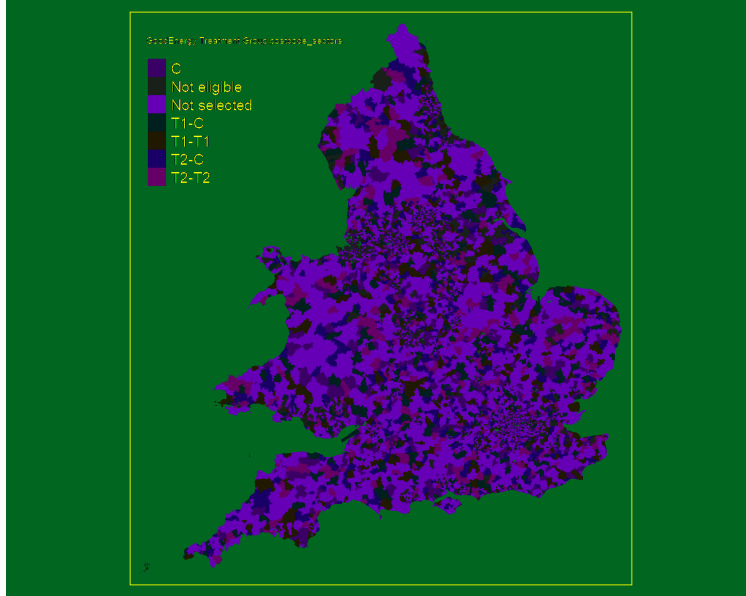


Figure 2: Randomized Assignment Map

The factorial design confers three main benefits. First, it allows us to determine whether the opportunity to engage in social signaling using our materials affects participation and display behavior. The potential effect of recruitment messaging on participation is important from the perspective of practitioners and policymakers, who may seek to implement similar programs in the future, as well as for academics, who may be interested in subjects’ motivations to participate in such an initiative, particularly in the absence of financial incentives. Relatedly, the design allows us to identify any differential compliance effect—where compliance entails displaying the materials—since there may be selection effects based on whether the treatment itself is salient at the recruitment stage. Lastly, from an internal validity perspective, the design preserves our ability to compare outcomes of subjects in the treated and control conditions controlling for the possibility of selection based on recruitment messaging.⁸

The field experiment began in March 2019, when the randomized recruitment emails that solicited informed consent to join the initiative were sent through Qualtrics to all target households (see Appendix C for a comparison of eligible and ineligible postcode sectors). In June 2019, treated households were notified that the display materials were to be sent to their addresses shortly, while a small selection of treated addresses in London were visited over the following weeks for a qualitative assessment of compliance. Lastly, participants received a debrief survey via email in late January 2020, followed by a reminder email in early March for those who had not yet responded. The survey closed in June 2020.

⁸The drawback of all factorial designs is the potentially reduced precision with which we may be able to estimate the treatment effect of a particular combination of treatments, given that each combination inherits a smaller sample size than it would in the absence of the additional randomly assigned factors. We took this drawback into account when conducting our power calculations, so that the presented coefficients are generally precisely estimated.

2.3 Randomization Procedure and Balance Tests

We produced ten stratified random assignments and selected the randomization that minimized differences across treatment and email assignments. We performed a number of balance tests to ensure that our randomization was successful (see Tables A.3 and A.4). These tests include data at the postcode sector level on the number of Utility customers, urbanization, voting behavior, age, employment, generalized trust, environmental attitudes, supplier type (in terms of contribution of renewable sources to the supplier’s energy mix), and electricity meter type. We find no systematic differences across treatment groups—neither for assignment to receive materials (and incentives) nor for assignment to the recruitment email variant—at the 5% significance level.

2.4 Debrief Survey

We administered a debrief survey to all 3,836 participants remaining in the study at the beginning of 2020. It opened on January 30, with eligibility for ten lottery prizes each worth £100 in Tango rewards, a popular e-gift card program in the United Kingdom, that would close on March 20, 2020.

The aim of the survey is fourfold. First, it allows us to determine whether eligible participants actually received their display material and, conditional on receipt, whether the participants went on to display them. If materials were displayed, we elicited information on their specific location and visibility, as assessed by the participants. For those who did not display their material, we asked their reasons for abstaining. Second, we explore the motives of participants to demand and display a yard sign or window cling. Third, we collect data about the neighborhood in which the participants live and the extent of relationships among neighbors to allow for assessment of generalizability, as social capital may matter for people’s willingness to engage in publicly displaying their pro-environmental behavior (see Table A.5). Finally, we collect participants’ standard socioeconomic characteristics as well as political preferences, environmental preferences, and reported environmental behaviors. Appendix G provides the full survey instrument.

Table 2: Survey Participation by Email x Treatment Assignment

Email x Treatment	No.	%
Control	453	51.5
Control email/Display	374	46.6
Display email/Display	343	51.0
Control email/Incentivized Display	370	45.6
Display email/Incentivized Display	324	47.4
Total	1864	-

The overall response rate was 48.6%. Table 2 provides the response rate by treatment arm. Using a chi-square goodness-of-fit test to determine whether the expected

and observed response frequencies vary—where the expected frequency is the number of responses we would expect based on the number of survey links sent to each email-by-treatment group—we do not find evidence of imbalance in survey response frequency across groups ($\chi_2=4.73$, $p=0.316$).⁹

3 Empirical Results

Our main outcomes of interest are participation in the initiative (submitting an informed consent survey) and displaying of materials conditional on having received them, the latter of which is based on a self-reported measure from the debrief survey emailed to participants six months after we distributed the materials.

3.1 Participation

We first test whether financial incentives serve to increase participation levels. A statistical comparison of participation rates between the Display email (17.1% participation) and the Incentivized Display email (16.8% participation) shows that, on average, financial incentives did not motivate participation beyond the intrinsic motivation to display.¹⁰ This result is confirmed by the regression estimates in Table 3. The effect of these two recruitment emails on participation is statistically indistinguishable and virtually identical.

While we could immediately conclude that financial incentives did not (de-)motivate participation, we also test for heterogeneity across several dimensions to determine whether the lack of difference in participation conditional on these offers is due to systematic variation in responses across subjects. In principle, it could be the case that financial incentives increase adoption in one customer “type” while decreasing it in another by the same amount—for instance, due to motivational crowding out—so that the two effects exactly offset each other; Appendix D tackles this question. We find no evidence of any statistically significant heterogeneous treatment effects and no pattern sufficiently strong to justify equally compensated crowding in and crowding out. Our result is consistent with the general observation that motivational crowding out is relatively rare in the field (DellaVigna and Pope, 2018).

We additionally test whether the opportunity to display one’s adoption of a renewable energy plan encouraged participation beyond the option to respond to a research survey alone, the latter representing our control group. Contrary to our intuition, the offer of free materials actually decreased participation from 20.6% for individuals who received a recruitment email without an offer to receive materials, to 16.9% for those who received an offer of free materials (t-test, $p=0.00$). We explore these results further in Section 3.3 below.

⁹Aggregating this balance test to consider treatment—as opposed to email-by-treatment—assignment, the same test produces $\chi_2=3.01$, $p=0.222$.

¹⁰Note that we do not have information on how many customers opened our invitation email. These figures therefore represent the relevant number for replication purposes, by practitioners or policymakers, but possibly are a lower-bound measure of actual interest in participation conditional on opening one’s energy supplier’s emails.

Table 3: Effect of Receiving the Incentivized Display Email Relative to the Display Email

Incentivized Display Email	-0.003 (0.008)
Constant	0.171*** (0.006)
Observations	8287

Notes: The dependent variable in this regression is a dummy variable for having signed up to participate in the initiative (=1) or not (=0), and we report the regression using standard OLS, though the results are robust to use of a logit regression. The reference category is the group who received the Display email (i.e. with no financial incentive).

3.2 Displaying Behavior

Further, we examine whether participating customers who were eligible to receive materials—regardless of which recruitment email they received—subsequently displayed the yard signs and window clings they received, and whether we observe any difference across treatments in the propensity to display. If such “compliance” were low, then we would conclude that, upon receipt of the material, participants (implicitly) assessed that the combined prosocial and signaling motives do not outweigh the effort costs, or that the signs and window clings fell short of their expectations. On the contrary, the debrief survey data show that the self-reported display rate is 78.5% conditional on having received the materials, as 87% of the treated survey sample did. We further explore motives for displaying below.

In line with the absence of an effect of the financial incentive on participation, we do not find a statistically significant difference in self-reported displaying behavior between the first (77.4%) and second (79.5%) treatment arms (χ^2 -test, $p=0.38$). We thus conclude that a sizable proportion of sampled individuals were intrinsically motivated to sign up to receive materials as well as to display them, and that financial incentives did not significantly alter these behaviors.

It is important to note that the display rate is calculated over the participants who responded to the survey and cannot be observed for those who did not. Responding to the survey and displaying the material could be correlated. An extreme assumption would be that all participants who did not respond to the survey did not display the material. In this case, we would obtain a lower bound for the display rate of 37.4%, resulting from the weighted average of 0% presumed display behavior among the 52.5% of the treated sample who did not participate in the survey, and the reported 78.5% display rate among the remaining 47.5% respondents who did.

While overall displaying behavior would be fairly high even in this rather extreme scenario, we test the plausibility of the assumption that non-respondents did not display their material by comparing display rates among respondents based on the week of

response. The assumption here is that individuals who replied to the survey later, including after an email reminder, would be more similar to individuals who did not respond at all than those who responded right away. Figures 3 and 4 show that while most responses were recorded within a few days from the initial invitation or from a reminder, the compliance rate was rather stable over time. If anything, it increased over time, suggesting that the eagerness with which participants completed the survey does not positively correlate with self-reported compliance. This pattern partially addresses our concern about selection and social desirability bias, and again supports the evidence regarding prosocial and signaling motivations’ effectiveness to make invisible environmental behaviors observable to peers.

3.3 Mechanisms

In this section, we provide a set of exploratory analyses to delve deeper into the factors underlying our main results. We first analyze the motives for people’s decisions to display materials. Then, we investigate the difference in participation between the control and treatment groups.

In line with the main goal of our initiative, Table 4 shows that the primary reported motive for displaying was overwhelmingly to encourage others to adopt. Among respondents who did not display, about 55% declared that their decision was due to lack of visibility to passersby. A small minority did not like the material’s aesthetics (7.6%), while another small minority lost their material to pests or thieves (8.0%). Thus, people appreciated the opportunity to influence others’ behaviors, giving prominence to their role as front runners. Besides direct social signaling, which is identified as a main motive by some participants, social rewards are also at stake, since the intervention provides treated subjects with the opportunity to act as role models or “influencers” to encourage others to undertake prosocial decisions.

Table 4: Reported Motives for Displaying

Motive	Responses	Percent
Encourage others to adopt	710	86.0%
Reciprocity to supplier	48	5.8%
Social signaling	41	5.0%
Financial incentive	7	1.1%
Other	18	2.2%

Notes: The relevant survey question asked, “What did you primarily hope to achieve by displaying the sign/window cling?” The provided responses, in randomized order, included, “Displaying may encourage others to adopt renewable energy as well, which would have environmental benefits” (Encourage others to adopt); “I love Good Energy, and this is the least I can do to support them the same way they’ve supported me” (Reciprocity to supplier); “I want others to know that my dwelling is powered by 100% renewable energy” (Social signaling); and “I was interested in the financial incentives associated with the initiative.”

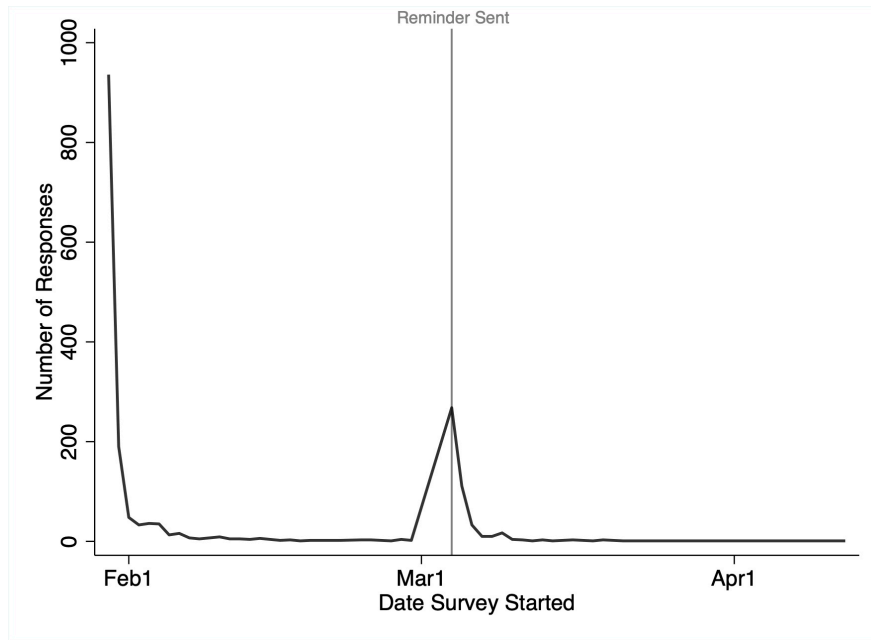


Figure 3: Debrief Survey Responses Over Time

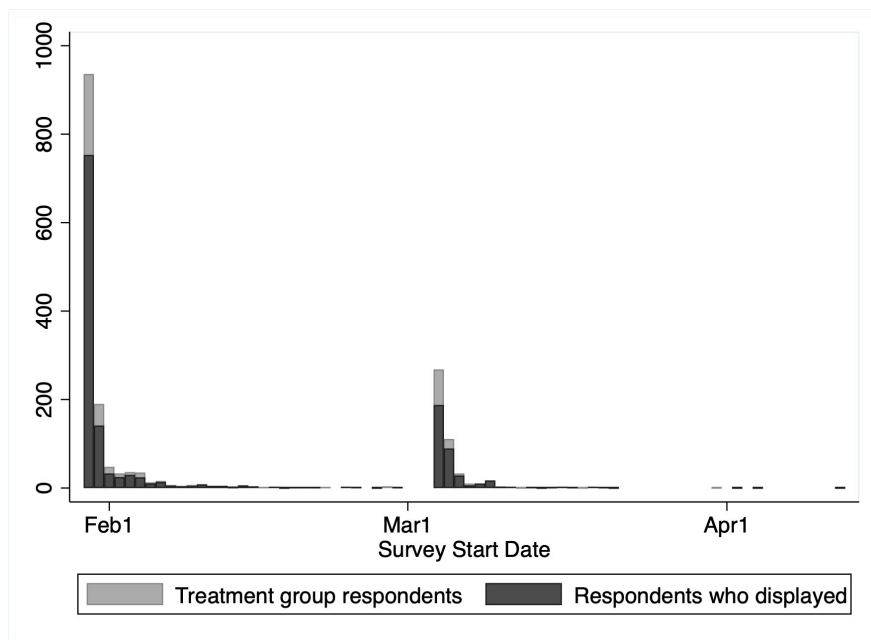


Figure 4: Display Rates and Response Time

Next, we analyze the difference in participation (i.e. consent provision) based on whether the recruitment email made an explicit offer to send display materials. As

indicated in section 3, we find that participation was lower for those who received an explicit offer to receive a display material (16.9%) than for those who did not (20.6%). To explain the lower participation conditional on receiving such an offer, we leverage the five-arm structure of the research design.¹¹ Our main conjecture for the difference between control and treatment arms is that a small minority of utility customers have very strong environmental preferences, such that while they would take part in a research initiative collecting data about their behavior in terms of renewable energy use, they would not consent to a similar initiative involving provision of disposable materials.

Three issues lend support to this conjecture. First, customers who received the control email who were nevertheless assigned to receive a material may have been more likely to attrit once they were notified that they would be receiving the material. Second, these customers may have been less likely to display the materials they received, given they had not explicitly opted in to receive them. Third, our sample of green utility customers is characterized by rather strong environmental preferences, both in absolute terms and relative to the underlying population (see Tables 5 and A.6).

We can empirically explore the second and third issues. With regard to the first, attrition is measured as the fraction of participants that, after receiving a notification that their sign or cling would be sent shortly, contacted us to let us know that they were not interested in receiving it. Attrition was rather low, with only about 3% of participants dropping out. While this level of attrition may partially explain the difference in participation conditional on email received—i.e. if most or all attritors received the control email and were assigned to receive materials—we unfortunately do not have access to differential attrition rates across treatment arms due to data protection regulations.

The second issue can be directly tested. We compare compliance rates across treatment arms and find slightly lower compliance among the individuals who received the control email than those who received either treatment email. While the difference is not statistically significant, it is on the same order of magnitude—about 2.5%—of the difference in participation between the treatment and control email arms. That is, some customers receiving the control email might have otherwise opted out had they been assigned to receive a treatment email.

The third reason relates to aversion to waste generation. While we intentionally sought out an environmentally-friendly solution for the signs—an FSC-certified recycled and recyclable outdoor board—window clings are inherently not recyclable, and it would have been fair to assume that our initiative had a strictly positive footprint. We therefore use self-reported data on participants’ performance on three waste-minimizing behaviors from the debrief survey as a measure of waste aversion. The relevant question—drawn from the United Kingdom’s Understanding Society panel survey (Wave 4, 2012-2014)—asked how often the participants (i) “decide not to buy

¹¹All customers who received the control email and signed up would have done so through a consent survey where they were asked to agree to take part in the study. One of the consent items declared that they had read the study information sheet, which indicated that they may receive such materials. Thus, while this information was available to them, it was not included in the invitation email and therefore lacked salience. All consenting households were subsequently informed that materials were going to be mailed to them and were given another chance to opt out.

something because they feel it has too much packaging”, (ii) “buy recycled paper products such as toilet paper or tissues”, and (iii) “take their own shopping bag when shopping”.¹² In line with expectations, we find a relatively high level of waste aversion among our participants, consistently across treatments, largely above what was reported in the national survey from which we drew the question (Table 5). Hence, our sample of early adopters of renewable energy is also a sample of “green warriors” when it comes to waste aversion, which further supports the notion that the printing of materials serves to reduce participation.¹³

Table 5: Comparison of Waste Behaviors between our Sample and the Underlying Population

Variable	UK Sample	Debrief Survey Sample
Minimize Packaging	% selected	% selected
Never	53.18%	2.27%
Not very often	21.86%	18.04%
Quite often	8.86%	37.60%
Very often	4.05%	36.20%
Always	1.67%	5.06%
N/A	10.38%	0.83%
<i>average score (scaled 1-5)</i>	1.7	3.2
Buy Recycled Paper Products	% selected	% selected
Never	29.26%	0.93%
Not very often	21.76%	7.97%
Quite often	17.63%	14.61%
Very often	11.57%	30.91%
Always	7.75%	45.23%
N/A	12.03%	0.35%
<i>average score (scaled 1-5)</i>	2.4	4.1
Bring Reusable Shopping Bags	% selected	% selected
Never	15.92%	0.12%
Not very often	9.04%	0.23%
Quite often	10.78%	1.22%
Very often	14.46%	12.28%
Always	38.70%	86.03%
N/A	11.10%	0.12%
<i>average score (scaled 1-5)</i>	3.6	4.8

4 Conclusion

Tackling climate change requires radical societal changes, including rapid and widespread adoption of climate-friendly technologies and behaviors that are often unfamiliar or seemingly out of reach for the majority of the population. A vast body of

¹²Note that each of these questions were asked on a five-point scale from “Never” to “Always”. However, due to the very low number of observations in the lower categories, we combined the lowest two categories for both the packaging and recycled products question, and converted the shopping bag variable to binary (i.e. either always or otherwise) prior to running our regressions.

¹³The term “green warriors” was coined by the Utility to refer to many households in their customer base.

behavioral science research provides lessons on how to nudge individuals toward more climate-friendly behaviors, mostly with social interventions that leverage descriptive and injunctive norms.

Many such interventions have built on relatively large fractions of ‘virtuous’ households, which provide accordingly high descriptive norms. However, research has only recently started to tackle the more difficult question of how to facilitate the transition from non-normative to normative of various (and potentially more impactful) climate-friendly behaviors. This experimental research focuses on how to popularize niche behaviors for which the fraction of ‘virtuous’ households is still small and the use of standard descriptive norms would likely backfire. Achieving behavioral change in such settings could have sizable positive impacts, substantially reducing the environmental footprint of energy consumption well beyond what is generally achieved by social interventions aimed at energy conservation.

One immediate observation when considering non-normative climate-friendly behaviors, such as carbon offsetting or the adoption of renewable energy tariffs, is that they are largely unobservable. Hence, making such behaviors observable may accelerate their adoption. It is, however, an empirical question whether front runners are willing to make their behavior visible when given the opportunity.

Our study addresses precisely this question in the context of 100% renewable energy tariffs. In particular, it examines whether early adopters are motivated to display their climate-friendly behavior. To this end, we partnered with a renewable energy utility in the United Kingdom to implement a field experiment comprising over 20,000 customers. Randomizing over geographical locales, we invited customers to participate in an initiative that would provide them with free yard signs and window clings to make their renewable energy choice visible.

Randomly varying the presence and salience of financial incentives to receive and display these materials, we find that customers are indeed motivated to showcase their pro-climate behavior, and that financial incentives are not necessary—nor effective—to encourage them. Hence, we provide strong evidence that a significant proportion of early adopters of invisible climate-friendly behaviors (about 20%, in our context) appreciates and capitalizes on the opportunity to make such behaviors observable.

This study paves the way for both new research and practitioner interventions to generate novel solutions aimed at catalyzing early adoption of as yet non-normative climate-friendly behaviors. Many such behaviors—not only carbon offsetting and the adoption of renewable energy tariffs, but also for instance substituting air travel or investing in energy efficiency—have the potential to achieve sizable reductions in greenhouse gas emissions, but their social invisibility may represent a challenge. Performing them will not generate social rewards and the opportunities for social contagion may be limited.

Our research highlights a vast opportunity to scale up niche behaviors by leveraging early adopters’ social motivations to improve the visibility of non-normative choices. Future research should build on early adopters’ intrinsic motivation to display their climate-friendly behavior to increase the uptake of other prosocial behaviors both directly through the creation of social rewards and indirectly by facilitating social contagion.

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Appendix

A Power Calculations

There are two overarching outcomes of interest in this study: participation in the program and compliance with the treatment (i.e. displaying of materials), as shown in Table A.1.

Table A.1: Outcomes and Samples of Interest

Outcome:	Unit	Qualifier	Size
Participation	Household	Received email	Up to about 20,000
Display	Household	Opted in	Approx. 2000

For participation, there were two possible scenarios at the outset: (1) relatively high opt-in rates (e.g., 10-30%) or (2) relatively low opt-in rates (e.g. <10%). For the former case, we performed power calculations based on differences in proportions of households that would opt in, and for the latter case we performed power calculations based on differences in rates. Given sample size uncertainty for participation, we investigated a range of effect sizes that would be detected with a sample size between 2000 and 4000 households. Next, we explored effect sizes with a sample size of approximately 400 households for compliance.

All power calculations in Table A.2 centered upon a significance level of 95% ($\alpha=0.05$) and power of 90% ($\beta=0.10$). Depending on the participation rate and our assumptions about the proportion of households who would consent to participate with the ‘control’ email, we expected to be powered to detect a 0.9 percentage point effect at best, and a 5.1 percentage point effect at worst for participation. For compliance, we expected to be powered to detect a 2.7 percentage point increase (from a baseline of 0) in displaying of materials of Display over Control, and a 4 to 11.4 percentage point increase in displaying of materials by Incentivized Display over Display. Finally, depending again on the participation rate, we expected to be powered to detect a treatment effect of 2.7 to 8.5 percentage points in postcode sector level adoption rates between treated and control groups.¹⁴

¹⁴Note that prior to the experiment, 0.1 residents per postcode sector were signing up to our partner utility each quarter. Given that there were approximately 7,384 residents per postcode sector, we translated these figures into a proportion to determine the lowest expected take-up rate in each postcode sector, i.e. 0.016 households per 1000 residents.

Table A.2: Power calculations under various baseline assumptions

Outcome	Power Test	Power	Alpha	F	MDE	Lowest baseline	Sample	
Participation	Two Rates	90	0.05	10.51	2.4	0.09	3721	per group
Participation	Two Rates	90	0.05	10.51	3.3	0.09	2055	per group
Participation	Two Rates	90	0.05	10.51	2.2	0.08	3951	per group
Participation	Two Rates	90	0.05	10.51	3.1	0.08	2088	per group
Participation	Two Rates	90	0.05	10.51	2.1	0.07	3836	per group
Participation	Two Rates	90	0.05	10.51	2.9	0.07	2111	per group
Participation	Two Rates	90	0.05	10.51	2	0.06	3678	per group
Participation	Two Rates	90	0.05	10.51	2.7	0.06	2119	per group
Participation	Two Rates	90	0.05	10.51	1.8	0.05	3827	per group
Participation	Two Rates	90	0.05	10.51	2.5	0.05	2101	per group
Participation	Two Rates	90	0.05	10.51	1.6	0.04	3940	per group
Participation	Two Rates	90	0.05	10.51	2.3	0.04	2046	per group
Participation	Two Rates	90	0.05	10.51	1.4	0.03	3967	per group
Participation	Two Rates	90	0.05	10.51	2	0.03	2101	per group
Participation	Two Rates	90	0.05	10.51	1.2	0.02	3794	per group
Participation	Two Rates	90	0.05	10.51	1.7	0.02	2072	per group
Participation	Two Rates	90	0.05	10.51	0.9	0.01	3762	per group
Participation	Two Rates	90	0.05	10.51	1.3	0.01	2052	per group
Participation	Two Props	90	0.05	10.51	0.023	0.1	3931	per group
Participation	Two Props	90	0.05	10.51	0.032	0.1	2100	per group
Participation	Two Props	90	0.05	10.51	0.03	0.2	3936	per group
Participation	Two Props	90	0.05	10.51	0.042	0.2	2046	per group
Participation	Two Props	90	0.05	10.51	0.033	0.25	3767	per group
Participation	Two Props	90	0.05	10.51	0.045	0.25	2053	per group
Participation	Two Props	90	0.05	10.51	0.034	0.3	3931	per group
Participation	Two Props	90	0.05	10.51	0.047	0.3	2077	per group
Participation	Two Props	90	0.05	10.51	0.036	0.4	3940	per group
Participation	Two Props	90	0.05	10.51	0.05	0.4	2049	per group
Participation	Two Props	90	0.05	10.51	0.037	0.5	3828	per group
Participation	Two Props	90	0.05	10.51	0.051	0.5	2010	per group
C vs D	Two Rates	90	0.05	10.51	2.7	0	389	per group
D vs ID	Two Rates	90	0.05	10.51	4	0.01	394	per group
D vs ID	Two Rates	90	0.05	10.51	4.9	0.02	389	per group
D vs ID	Two Rates	90	0.05	10.51	5.5	0.03	399	per group
D vs ID	Two Rates	90	0.05	10.51	6.1	0.04	398	per group
D vs ID	Two Rates	90	0.05	10.51	6.7	0.05	391	per group
D vs ID	Two Rates	90	0.05	10.51	7.1	0.06	398	per group
D vs ID	Two Rates	90	0.05	10.51	7.6	0.07	393	per group
D vs ID	Two Rates	90	0.05	10.51	8	0.08	394	per group
D vs ID	Two Rates	90	0.05	10.51	8.4	0.09	393	per group
D vs ID	Two Props	90	0.05	10.51	0.079	0.1	399	per group
D vs ID	Two Props	90	0.05	10.51	0.099	0.2	397	per group
D vs ID	Two Props	90	0.05	10.51	0.105	0.25	397	per group
D vs ID	Two Props	90	0.05	10.51	0.109	0.3	400	per group
D vs ID	Two Props	90	0.05	10.51	0.114	0.4	397	per group
D vs ID	Two Props	90	0.05	10.51	0.114	0.5	394	per group

Notes: We used a two-rates or two-proportions sample size calculation depending on the assumed baseline adoption in the Control group. Observation units are households. ‘MDE’ stands for minimum detectable effect.

B Balance Tests

Table A.3: Balance Test of Treatment Assignment

	Control	T1	T2	T1= T2	T1= C	T2= C
Customers	6.221 (7.803)	6.181 (8.005)	6.256 (7.98)	p= 0.810	p= 0.915	p= 0.926
Customers per 1K residents	1.033 (1.189)	1.056 (1.344)	1.04 (1.218)	p= 0.737	p= 0.694	p= 0.909
Urban Customers (%)	66.272 (43.463)	65.656 (44.084)	65.708 (43.841)	p= 0.976	p= 0.767	p= 0.785
Number of Residents	7312.131 (3583.241)	7349.57 (3738.445)	7338.337 (3575.811)	p= 0.937	p= 0.829	p= 0.878
Urban Population (%)	72.152 (42.012)	71.91 (42.284)	71.491 (42.285)	p= 0.799	p= 0.904	p= 0.741
Urban Area (%)	46.629 (39.907)	46.245 (40.062)	45.274 (39.782)	p= 0.531	p= 0.840	p= 0.475
Green Party Votes (%)	1.95 (2.766)	1.839 (2.198)	1.901 (2.826)	p= 0.525	p= 0.364	p= 0.709
Labour Party Votes (%)	40.837 (18.178)	40.636 (17.578)	40.12 (17.562)	p= 0.448	p= 0.814	p= 0.401
Density (residents/hectare)	26.855 (33.478)	28.513 (37.573)	27.648 (35.907)	p= 0.544	p= 0.318	p= 0.627
Mean Age	40.302 (4.633)	40.272 (4.616)	40.257 (4.545)	p= 0.933	p= 0.891	p= 0.837
Semi-/Detached Housing (%)	55.48 (24.831)	55.422 (25.094)	55.259 (25.083)	p= 0.868	p= 0.961	p= 0.853
Home Ownership (%)	64.547 (17.383)	64.467 (17.393)	64.36 (17.28)	p= 0.874	p= 0.922	p= 0.820
No Educational Qualifications (%)	21.512 (7.696)	21.146 (7.484)	21.363 (7.417)	p= 0.452	p= 0.313	p= 0.680
Unemployed (%)	4.006 (1.888)	3.94 (1.904)	3.971 (1.903)	p= 0.677	p= 0.463	p= 0.695
High Trust Score (%)	72.016 (4.661)	72.055 (4.714)	71.912 (4.667)	p= 0.431	p= 0.858	p= 0.640
Willing to Switch to Green Appliance (%)	86.492 (3.652)	86.468 (3.601)	86.498 (3.561)	p= 0.833	p= 0.892	p= 0.973
Willing to Reduce Energy Use (%)	74.954 (6.049)	74.725 (6.079)	74.713 (5.914)	p= 0.961	p= 0.425	p= 0.399
Favor Green energy (%)	73.513 (2.575)	73.345 (2.59)	73.402 (2.505)	p= 0.567	p= 0.172	p= 0.361
Feel Responsible for Climate (%)	79.529 (3.311)	79.498 (3.234)	79.517 (3.265)	p= 0.878	p= 0.842	p= 0.940
Favor Green Subsidies (%)	69.317 (5.671)	69.35 (5.673)	69.301 (5.557)	p= 0.819	p= 0.901	p= 0.952
Favor Fossil Fuel Tax (%)	38.471 (8.356)	38.506 (8.254)	38.395 (8.336)	p= 0.731	p= 0.93	p= 0.848
Supplier Renewable Share (<10%)	7.646 (2.342)	7.539 (2.249)	7.695 (2.388)	p= 0.084	p= 0.331	p= 0.663
Supplier Renewable Share (10%-25%)	52.208 (7.165)	52.403 (7.562)	52.179 (7.342)	p= 0.438	p= 0.574	p= 0.932
Supplier Renewable Share (25%-40%)	2.719 (2.303)	2.721 (2.405)	2.722 (2.318)	p= 0.990	p= 0.989	p= 0.981
Supplier Renewable Share (40%-80%)	23.381 (5.629)	23.315 (5.793)	23.41 (5.565)	p= 0.667	p= 0.805	p= 0.916
Supplier Renewable Share (80%-99%)	0.092 (0.111)	0.092 (0.121)	0.109 (0.348)	p= 0.096	p= 0.964	p= 0.114
Supplier Renewable Share (100%)	10.771 (3.108)	10.762 (3.264)	10.735 (3.321)	p= 0.832	p= 0.952	p= 0.811
Supplier Renewable Share (Unknown)	3.181 (1.218)	3.169 (1.179)	3.151 (1.196)	p= 0.700	p= 0.822	p= 0.595
SMETS1 Meter Installed (%)	35.518 (19.75)	35.107 (20.431)	35.393 (19.939)	p= 0.796	p= 0.651	p= 0.889
SMETS 2 Meter Installed (%)	0.235 (0.325)	0.22 (0.3)	0.249 (0.324)	p= 0.102	p= 0.288	p= 0.354
NSS Meter Installed (%)	7.016 (5.634)	7.036 (5.618)	6.948 (5.187)	p= 0.765	p= 0.935	p= 0.775
Prepay Meter Installed (%)	17.379 (9.966)	17.771 (10.161)	17.276 (9.764)	p= 0.365	p= 0.387	p= 0.813
Other Meter Installed (%)	39.852 (21.202)	39.865 (22.126)	40.135 (21.714)	p= 0.822	p= 0.989	p= 0.77
Customers	N= 4,131	N= 8,209	N= 8,308			
Postcode sectors	n= 664	n= 1,328	n= 1,328			

Notes: For a description of the balancing covariates, see Table A.8

Table A.4: Balance Test of Email Assignment

	Control	T1	T2	T1=T2	T1=C	T2=C
Customers	6.221 (7.803)	6.255 (8.419)	6.14 (7.196)	p= 0.79	p= 0.941	p= 0.844
Customers per 1K residents	1.033 (1.189)	1.053 (1.359)	1.042 (1.197)	p= 0.866	p= 0.772	p= 0.897
Urban Customers (%)	66.272 (43.463)	65.894 (44.056)	65.869 (43.834)	p= 0.992	p= 0.875	p= 0.866
Number of Residents	7312.131 (3583.241)	7353.611 (3732.542)	7361.955 (3678.73)	p= 0.967	p= 0.836	p= 0.803
Urban Population (%)	72.152 (42.012)	71.797 (42.361)	71.607 (42.249)	p= 0.935	p= 0.878	p= 0.814
Urban Area (%)	46.629 (39.907)	46.558 (40.354)	45.503 (40.024)	p= 0.633	p= 0.974	p= 0.608
Green Party Votes (%)	1.95 (2.766)	1.837 (2.632)	1.856 (2.356)	p= 0.89	p= 0.443	p= 0.501
Labour Party Votes (%)	40.837 (18.178)	40.735 (17.477)	40.476 (18.007)	p= 0.791	p= 0.917	p= 0.716
Density (residents/hectare)	26.855 (33.478)	28.709 (36.634)	28.404 (37.541)	p= 0.881	p= 0.336	p= 0.428
Mean Age	40.302 (4.633)	40.243 (4.719)	40.061 (4.527)	p= 0.473	p= 0.816	p= 0.336
(Semi-)/Detached Housing (%)	55.48 (24.831)	55.339 (25.41)	54.401 (25.285)	p= 0.500	p= 0.919	p= 0.433
Home Ownership (%)	64.547 (17.383)	64.616 (17.928)	63.833 (17.599)	p= 0.422	p= 0.943	p= 0.457
No Educational Qualifications (%)	21.512 (7.696)	20.884 (7.476)	21.349 (7.471)	p= 0.257	p= 0.131	p= 0.694
Unemployed (%)	4.006 (1.888)	3.938 (1.926)	4.034 (1.983)	p= 0.367	p= 0.514	p= 0.789
High Trust Score (%)	72.016 (4.661)	72.052 (4.745)	72.015 (4.725)	p= 0.887	p= 0.889	p= 0.997
Willing to Switch to Freen Appliance (%)	86.492 (3.652)	86.45 (3.568)	86.323 (3.684)	p= 0.524	p= 0.832	p= 0.402
Willing to Reduce Energy Use (%)	74.954 (6.049)	74.794 (6.088)	74.517 (5.905)	p= 0.400	p= 0.63	p= 0.183
Favor Green Energy (%)	73.513 (2.575)	73.335 (2.642)	73.347 (2.487)	p= 0.929	p= 0.214	p= 0.234
Feel Responsible for Climate (%)	79.529 (3.311)	79.508 (3.21)	79.43 (3.332)	p= 0.662	p= 0.908	p= 0.587
Favor Green Subsidies (%)	69.317 (5.671)	69.426 (5.618)	69.099 (5.848)	p= 0.299	p= 0.724	p= 0.491
Favor Fossil Fuel Tax (%)	38.471 (8.356)	38.458 (8.254)	38.219 (8.403)	p= 0.602	p= 0.977	p= 0.585
Supplier Renewable Share (<10%)	7.646 (2.342)	7.62 (2.297)	7.671 (2.343)	p= 0.688	p= 0.835	p= 0.848
Supplier Renewable Share (10%-25%) p= 0.661	7.646 p= 0.585	7.62 p= 0.922	7.671 (7.457)	52.208	52.427	52.248
Supplier Renewable Share (25%-40%)	(7.165) 2.719 (2.303)	(7.423) 2.671 (2.355)	(7.457) 2.752 (2.33)	p= 0.527	p= 0.706	p= 0.795
Supplier Renewable Share (40%-80%)	23.381 (5.629)	23.171 (5.805)	23.42 (5.657)	p= 0.429	p= 0.502	p= 0.902
Supplier Renewable Share (80%-99%)	0.092 (0.111)	0.096 (0.127)	0.107 (0.214)	p= 0.249	p= 0.595	p= 0.119
Supplier Renewable Share (100%)	10.771 (3.108)	10.83 (3.31)	10.695 (3.433)	p= 0.463	p= 0.736	p= 0.671
Supplier Renewable Share (Unknown)	3.181 (1.218)	3.186 (1.25)	3.108 (1.193)	p= 0.243	p= 0.941	p= 0.268
SMETS1 Meter Installed (%)	35.472 (19.978)	36.547 (19.771)	34.535 (19.476)	p= 0.062	p= 0.325	p= 0.387
SMETS2 Meter Installed (%)	0.233 (0.316)	0.221 (0.297)	0.251 (0.359)	p= 0.104	p= 0.463	p= 0.357
NSS Meter Installed (%)	7.032 (5.496)	7.071 (5.517)	6.943 (5.889)	p= 0.681	p= 0.897	p= 0.774
Prepay Meter Installed (%)	17.421 (9.867)	17.217 (10.082)	17.501 (9.962)	p= 0.606	p= 0.71	p= 0.883
Other Meter Installed (%)	39.842 (21.292)	38.944 (21.331)	40.771 (20.975)	p= 0.116	p= 0.443	p= 0.423
Customers	N= 4,131	N= 4,153	N= 4,077			
Postcode sectors	n= 664	n= 664	n= 664			

Notes: For a description of the balancing covariates, see Table A.8

C Comparison of Our Sample with the Underlying Population

For our experiment, we selected postcode sectors based on the presence of customers of the Utility. Given that such customers are willing to pay a premium to receive 100% renewable energy from the Utility, we do not necessarily expect them to be representative of the underlying population. Hence, Table A.5 shows the differences in self-reported social capital measures between our sample and the UK population, and Table A.6 compares ‘eligible’ and ‘ineligible’ postcode sectors based on our criteria for eligibility, i.e. that postcode sectors would need at least one Utility customer to be selected for the experiment and for random allocation to one of the treatment arms.

As expected, eligible postcode sectors tend to differ from ineligible postcode sectors on a variety of dimensions. Such differences are virtually always statistically significant, but only so often economically meaningful. Important differences are observed in, for instance, population, share of urban areas, voting behavior, and unemployment rates. Even economically meaningful differences between eligible postcode sectors and ineligible ones, or the underlying population as a whole, would not affect the external validity of our results, since our subject pool is intentionally comprised of early adopters of environmental behaviors. Table A.6, however, may help in identifying the characteristics of the areas where such front runners live and may also help in devising strategies to then expand to other populations.

Table A.5: Reported Social Capital Measures in the Debrief Survey and in the UK

Question	Response	Debrief survey	UK sample
How strongly do you feel you belong to your immediate neighbourhood?	Very strongly or fairly strongly	84%	62%
How often do you chat to your neighbours, more than to just say hello?	At least once a month	88%	72%
Thinking about the people who live in this neighbourhood, to what extent do you believe they can be trusted?	Many people can be trusted	81%	40%
	Some people can be trusted	16%	34%
	A few people can be trusted	3%	23%
	None of the people can be trusted	0%	4%

Table A.6: Differences Between Ineligible and Eligible Postcode Sectors

Variable	(1) Ineligible	(2) Eligible	(3) Difference
Customers	0.000 (0.000)	6.359 (8.371)	6.359*** (0.227)
Customers Per 1K Residents	0.000 (0.000)	1.059 (1.607)	1.059*** (0.044)
Urban Customers (%)	0.000 (0.000)	65.858 (43.715)	65.858*** (1.184)
Number of Residents	4,995.940 (3,720.693)	7,384.417 (3,659.056)	2,388.477*** (109.045)
Urban Population (%)	84.795 (34.229)	71.820 (42.213)	-12.975*** (1.217)
Urban Area (%)	59.998 (38.167)	46.190 (39.994)	-13.807*** (1.179)
Green Party Votes (%)	1.291 (1.077)	1.877 (2.443)	0.586*** (0.067)
Labour Party Votes (%)	54.458 (18.097)	40.450 (17.633)	-14.009*** (0.526)
Density (residents/hectare)	30.104 (46.167)	27.851 (35.895)	-2.254** (1.124)
Mean Age	38.684 (5.115)	40.274 (4.613)	1.590*** (0.140)
Semi-/Detached Housing (%)	49.609 (27.254)	55.292 (24.963)	5.683*** (0.754)
Home Ownership (%)	57.477 (21.712)	64.611 (17.166)	7.134*** (0.535)
No Educational Qualifications (%)	27.062 (10.759)	21.222 (7.377)	-5.840*** (0.239)
Unemployed (%)	5.545 (2.867)	3.944 (1.869)	-1.601*** (0.062)
High Trust Score (%)	70.651 (4.910)	72.014 (4.671)	1.363*** (0.140)
Willing to Switch to Green Appliance (%)	84.574 (3.886)	86.492 (3.607)	1.919*** (0.109)
Willing to Reduce Energy Use (%)	72.834 (6.556)	74.792 (6.038)	1.957*** (0.182)
Favor Green Energy (%)	73.857 (2.253)	73.398 (2.573)	-0.459*** (0.075)
Feel Responsible for Climate (%)	78.507 (3.213)	79.507 (3.256)	1.000*** (0.097)
Favor Green Subsidies (%)	66.378 (5.876)	69.316 (5.647)	2.938*** (0.169)
Favor Fossil Fuel Tax (%)	34.261 (7.143)	38.455 (8.288)	4.194*** (0.241)
Supplier Renewable Share (<10%)	8.126 (2.748)	7.622 (2.303)	-0.504*** (0.071)
Supplier Renewable Share (10%-25%)	50.919 (9.822)	52.331 (7.350)	1.412*** (0.233)
Supplier Renewable Share (25%-40%)	4.678 (3.969)	2.674 (2.292)	-2.004*** (0.079)
Supplier Renewable Share (40%-80%)	25.379 (7.512)	23.357 (5.682)	-2.022*** (0.179)
Supplier Renewable Share (80%-99%)	0.081 (0.330)	0.097 (0.194)	0.016** (0.007)
Supplier Renewable Share (100%)	8.158 (3.746)	10.753 (3.263)	2.594*** (0.100)
Supplier Renewable Share (Unknown)	2.660 (1.273)	3.167 (1.177)	0.507*** (0.035)
SMETS1 Meter Installed (%S)	32.604 (16.376)	35.084 (19.899)	2.480*** (0.575)
SMETS2 Meter Installed (%S)	0.161 (0.289)	0.239 (0.332)	0.079*** (0.010)
NSS Meter Installed (%)	6.684 (6.349)	6.940 (5.470)	0.256 (0.167)
Prepay Meter Installed (%)	17.050 (11.996)	17.308 (10.059)	0.258 (0.309)
Other Meter Installed (%)	43.501 (19.947)	40.429 (21.372)	-3.072*** (0.628)
Observations	1,364	6,671	8,035

Notes: The table shows the differences in our balancing covariates across postcode sectors that were eligible for selection in the randomization process versus those that were not. All postcode sectors with at least one Utility customer were eligible for selection in the randomization process.

Table A.7: Differences between Unselected and Selected Postcode Sectors

Variable	(1) Unselected	(2) Selected	(3) Difference
Customers	6.498 (8.765)	6.219 (7.953)	-0.279 (0.205)
Customers Per 1K Residents	1.072 (1.886)	1.045 (1.264)	-0.027 (0.039)
Urban Customers (%)	65.916 (43.586)	65.800 (43.851)	-0.116 (1.071)
Number of Residents	7,430.813 (3,675.700)	7,337.589 (3,642.134)	-93.224 (89.600)
Urban Population (%)	71.849 (42.215)	71.791 (42.218)	-0.058 (1.034)
Urban Area (%)	46.445 (40.081)	45.933 (39.911)	-0.511 (0.979)
Green Party Votes (%)	1.869 (2.301)	1.886 (2.579)	0.017 (0.060)
Labour Party Votes (%)	40.429 (17.578)	40.470 (17.691)	0.040 (0.432)
Density (residents/hectare)	27.866 (35.682)	27.836 (36.114)	-0.030 (0.879)
Mean Age	40.276 (4.636)	40.272 (4.590)	-0.004 (0.113)
Semi-/Detached Housing (%)	55.217 (24.901)	55.368 (25.030)	0.152 (0.611)
Home Ownership (%)	64.781 (16.991)	64.440 (17.341)	-0.341 (0.420)
No Educational Qualifications (%)	21.139 (7.254)	21.306 (7.499)	0.167 (0.181)
Unemployed (%)	3.923 (1.838)	3.965 (1.900)	0.043 (0.046)
High Trust Score (%)	72.038 (4.660)	71.990 (4.684)	-0.048 (0.114)
Willing to Switch to Green Appliance (%)	86.500 (3.621)	86.485 (3.594)	-0.015 (0.088)
Willing to Reduce Energy Use (%)	74.817 (6.070)	74.766 (6.007)	-0.051 (0.148)
Favor Green Energy (%)	73.395 (2.594)	73.401 (2.553)	0.006 (0.063)
Feel Responsible for Climate (%)	79.503 (3.251)	79.512 (3.261)	0.009 (0.080)
Favor Green Subsidies (%)	69.309 (5.670)	69.324 (5.625)	0.015 (0.138)
Favor Fossil Fuel Tax (%)	38.455 (8.272)	38.454 (8.305)	-0.001 (0.203)
Supplier Renewable Share (<10%)	7.621 (2.282)	7.623 (2.325)	0.002 (0.056)
Supplier Renewable Share (10%-25%)	52.387 (7.306)	52.275 (7.395)	-0.112 (0.180)
Supplier Renewable Share (25%-40%)	2.627 (2.233)	2.721 (2.350)	0.094* (0.056)
Supplier Renewable Share (40%-80%)	23.348 (5.695)	23.366 (5.668)	0.018 (0.139)
Supplier Renewable Share (80%-99%)	0.095 (0.137)	0.099 (0.238)	0.004 (0.005)
Supplier Renewable Share (100%)	10.753 (3.271)	10.753 (3.256)	0.000 (0.080)
Supplier Renewable Share (Unknown)	3.170 (1.161)	3.164 (1.193)	-0.006 (0.029)
SMETS1 Meter Installed (%)S	34.761 (19.876)	35.411 (19.920)	0.650 (0.487)
SMETS2 Meter Installed (%)S	0.244 (0.344)	0.235 (0.320)	-0.009 (0.008)
NSS Meter Installed (%)	6.874 (5.396)	7.006 (5.543)	0.132 (0.134)
Prepay Meter Installed (%)	17.180 (10.153)	17.437 (9.964)	0.257 (0.246)
Other Meter Installed (%)	40.942 (21.250)	39.911 (21.486)	-1.030** (0.523)
Observations	3,351	3,320	8,035

Notes: The table shows the differences in our balancing covariates across eligible postcode sectors that were selected for participation in the research—whether as control or treated postcode sectors—and those that were not. All postcode sectors with at least one Utility customer were eligible for selection in the randomization process.

Table A.8: Description of Covariates Used in Balance Tests

Customers	Number of customers per postcode (Utility)
Customers Per 1K Residents	Customers per 1,000 residents (Utility, ONS)
Urban Customers (%)	Share of customers living in urban areas (ONS)
Number of Residents	Resident population (ONS)
Urban Population (%)	Share of urban population (ONS)
Urban Area (%)	Share of the area of the postcode sector that is classified as urban (ONS)
Green Party Votes (%)	Share of Green voters during the last General Elections (HoC)
Labour Party Votes (%)	Share of Labour voters during the last General Elections (HoC)
Density (residents/hectare)	Density (residents per hectare) (ONS)
Mean Age	Average resident age (ONS)
Semi-/Detached Housing (%)	Share of residents living in semi or detached housing (ONS)
Home Ownership (%)	Share of residents who own their house (ONS)
No Educational Qualifications (%)	Share of residents without educational qualifications (ONS)
Unemployed (%)	Share of unemployed population (ONS)
High Trust Score (%)	Share responding with a score of 5 or higher to the question: "Using this card, generally speaking, would you say that most people can be trusted, or that you cant be too careful in dealing with people?" (scale 0-10) (ESS)
Willing to Switch to Green Appliance (%)	Share responding with a score of 5 or higher to the question: "If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?" (scale 0-10) (ESS)
Willing to Reduce Energy Use (%)	Share responding "often, very often or always" to the question: "In your daily life, how often do you do things to reduce your energy use?" (ESS)
Favor Green Energy (%)	Share responding "Very large amount or large amount" to the question: "How much electricity in this country should be generated from renewable energies" (ESS)
Feel Responsible for Climate (%)	Share responding with a score of 5 or higher to the question: "To what extent do you feel a personal responsibility to try to reduce climate change?" (scale 0-10) (ESS)
Favor Green Subsidies (%)	Share responding in favor of using public money to subsidize renewable energy such as wind and solar power (ESS)
Favor Fossil Fuel Tax (%)	Share responding in favor of increasing taxes on fossil fuels, such as oil, gas and coal (ESS)
Supplier Renewable Share (<10%)	Share of energy accounts linked to energy providers with less than 10% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (10%-25%)	Share of energy accounts linked to energy providers with between 10% and 25% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (25%-40%)	Share of energy accounts linked to energy providers with between 25% and 40% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (40%-80%)	Share of energy accounts linked to energy providers with between 40% and 80% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (80%-99%)	Share of energy accounts linked to energy providers with between 80% and 99% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (100%)	Share of energy accounts linked to energy providers with 100% renewable energy in their fuel mix (Elec)
Supplier Renewable Share (Unknown)	Share of energy accounts linked to energy providers whose fuel mix is unknown (Elec)
SMETS1 Meter Installed (%)	Share of households with a SMETS1 meter installed (SMETS1 meters are the first generation of smart meter deployed by the industry, which are not compatible with the UK's centralized Data and Communication Company (DCC) but can send 30 min data to suppliers; they may revert to dumb mode if the customer switches supplier.) (Elec)
SMETS2 Meter Installed (%)	Share of households with a SMETS2 meter installed (SMETS2 meters are the second generation of smart meter, which provides data via the DCC and allows for supplier switching; about 120k - 130k of these installed as of Jan 2019, and customers generally do not choose which type of meter gets installed when they sign up for a smart meter installation.) (Elec)
NSS Meter Installed (%)	Share of households with NSS meter installed (NSS meters are non-SMETS meters that have some smart capabilities) (Elec)
Prepay Meter Installed (%)	Share of households with prepay meters (Elec)
Other Meter Installed (%)	Share of households with other meters (i.e. standard dumb meters) (Elec)

Notes: Data come from the partner Utility, UK Office of National Statistics (ONS), House of Commons Library (HoC), the European Social Survey (ESS), and Electralink (Elec). This data is then overlaid with the postcode polygons from the Crown Copyright Ordnance Survey (GIS Code Point Dataset).

D Treatment Effect Heterogeneity

Figures A.1 to A.10 estimate heterogeneous treatment effects according to standard socioeconomic characteristics to test whether we observe significant heterogeneity in participants' responses to our treatments. As discussed in our study pre-registry, we are particularly interested in understanding whether the treatment effects vary depending not only on postcode sector-level sociodemographic characteristics such as age, education, income, and race, but also depending on social, political, and environmental variables. Recall in particular that evidence from the literature suggests signaling may be particularly strong in greener locales (e.g., see Sexton and Sexton, 2014).

To analyze heterogeneity, we plot marginal treatment effects according to various values that characterize a given postcode sector, including (in this order) mean age, percent lacking educational qualifications, mean annual net income, percent non-white, percent non-Christian, percent Green Party voters, percent Labour Party voters, percent owning two or more personal cars, percent of households on renewable energy tariffs, and percent reporting a trust score of 5 or greater in response to the ESS trust question ("Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?", scaled 0-10). If particular individuals are more prone to motivational crowding in or out, such effects—if of comparable magnitude—could counter each other and imply a similar treatment effect for Display and Incentivized Display, as in our case. However, Figures A.1 to A.10 show that no particularly strong heterogeneity is present in our sample (where Treatment 1 refers to Display and Treatment 2 refers to Incentivized Display).

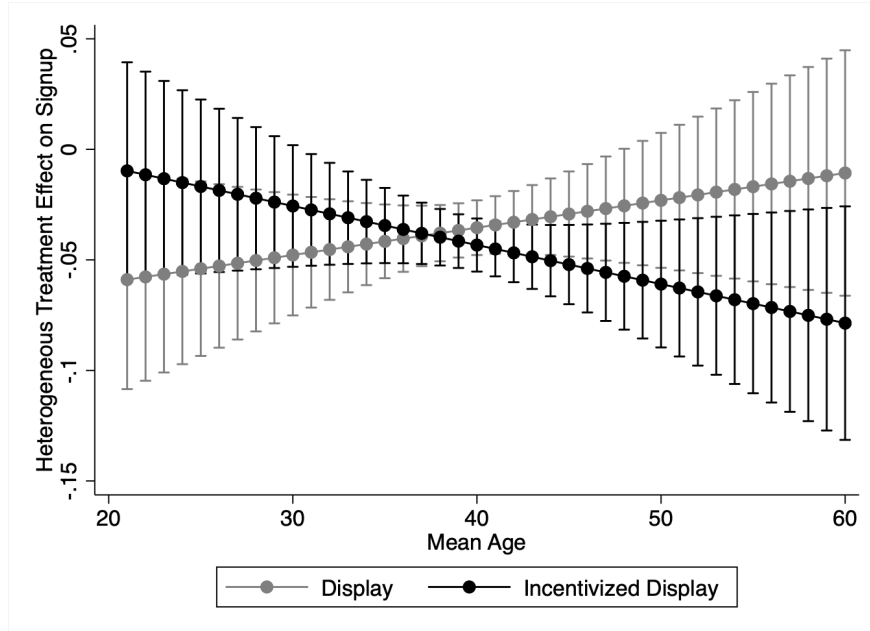


Figure A.1: Heterogeneous treatment effects by mean age in the postcode sector

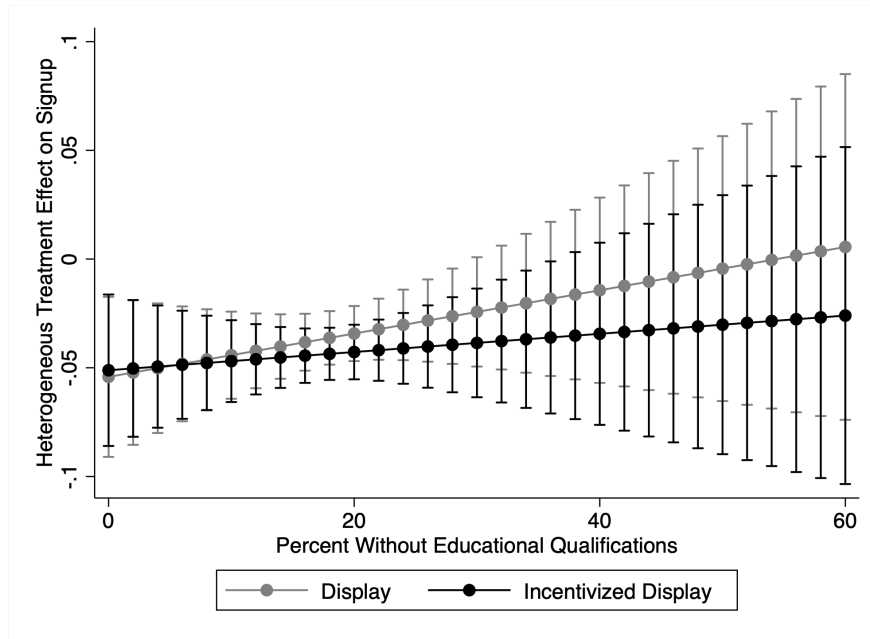


Figure A.2: Heterogeneous treatment effects by possession of educational qualifications in the postcode sector

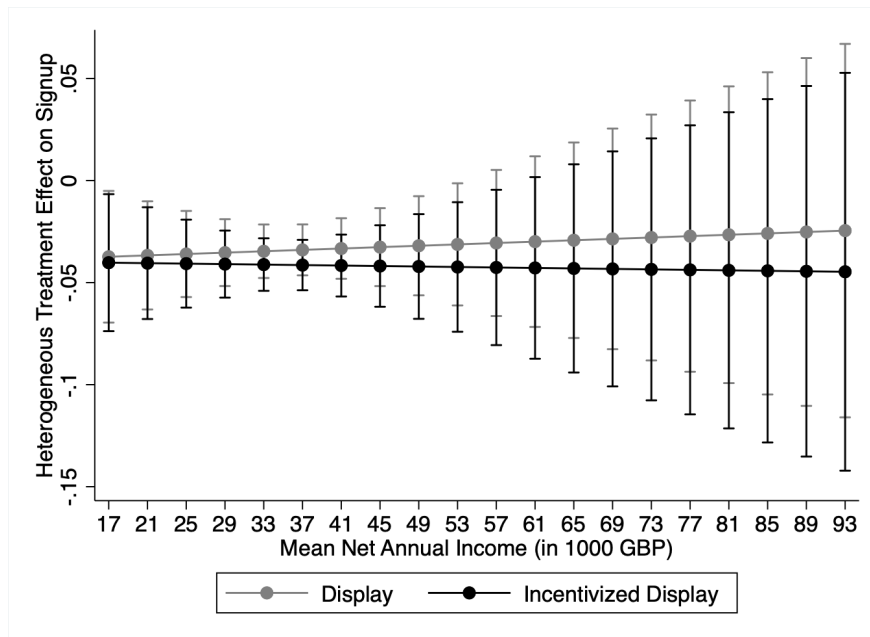


Figure A.3: Heterogeneous treatment effects by mean net annual income in the postcode sector

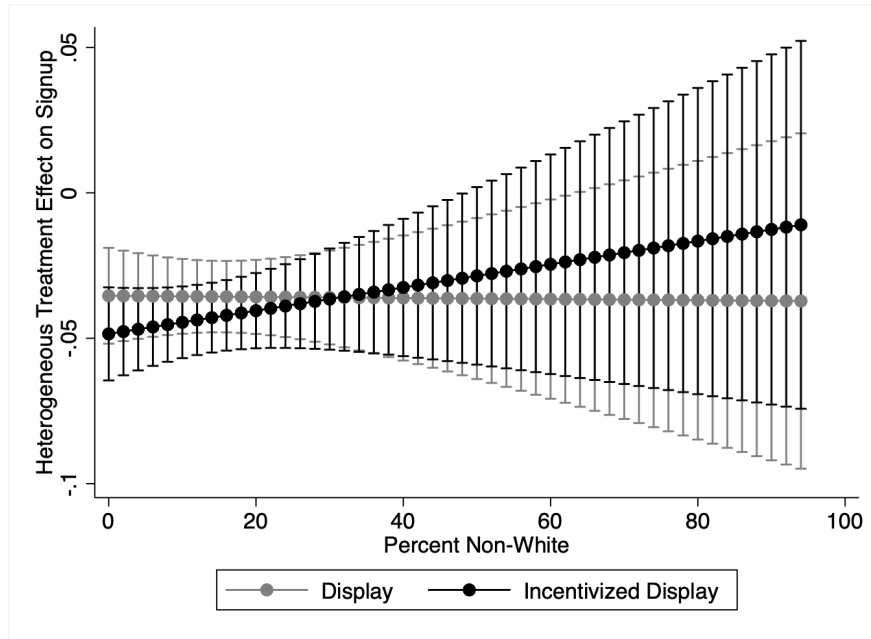


Figure A.4: Heterogeneous treatment effects by percent non-white in the postcode sector

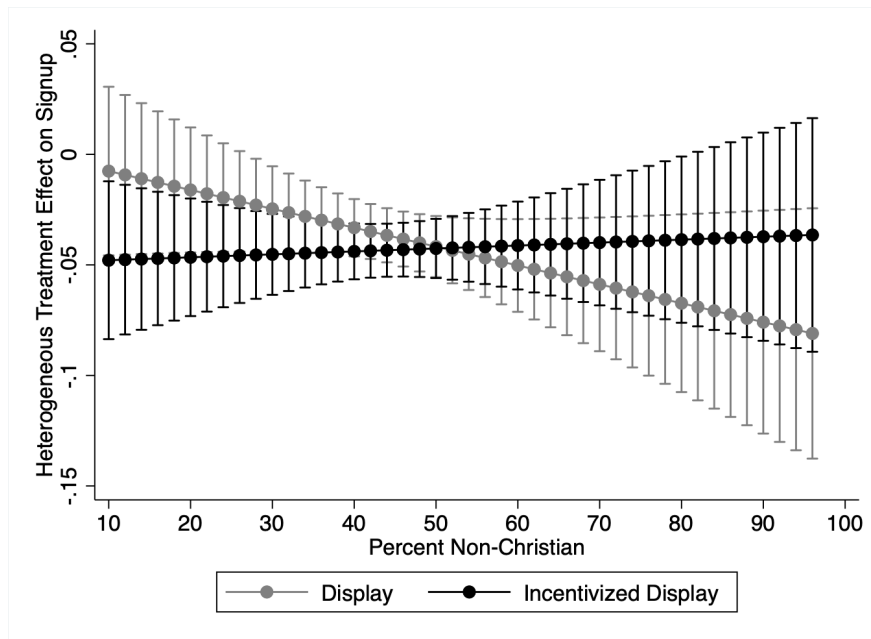


Figure A.5: Heterogeneous treatment effects by percent non-Christian in the postcode sector

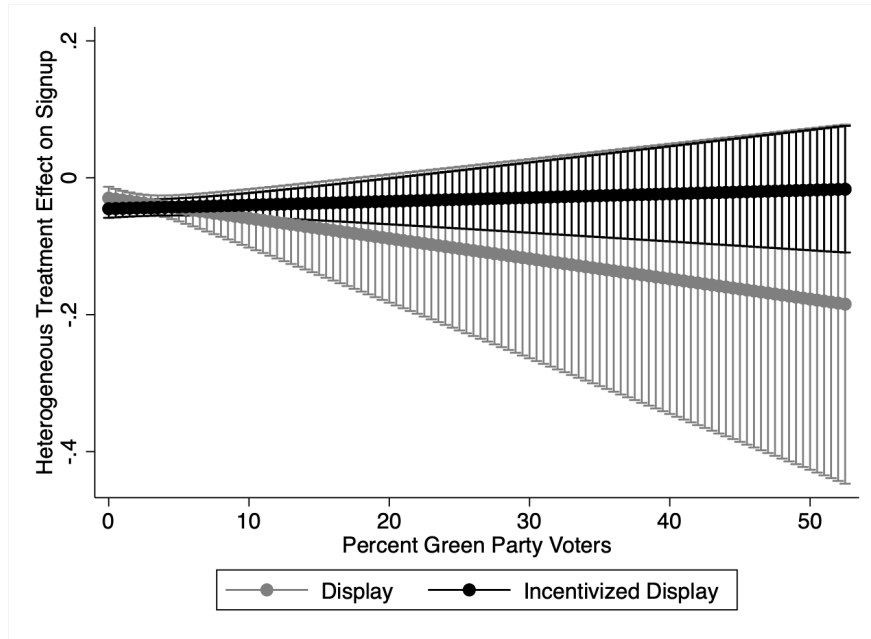


Figure A.6: Heterogeneous treatment effects by percent Green Party voters in the postcode sector

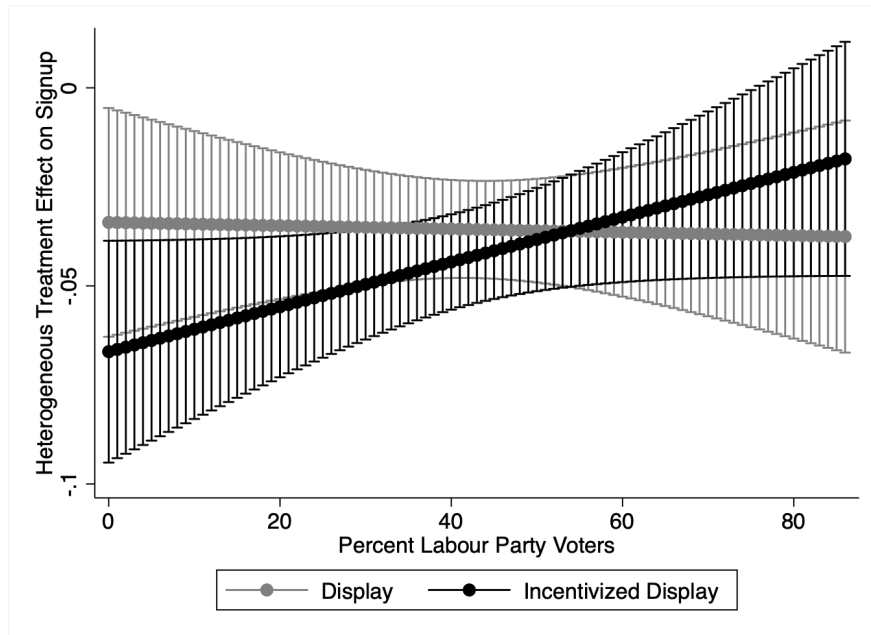


Figure A.7: Heterogeneous treatment effects by percent Labour Party voters in the postcode sector

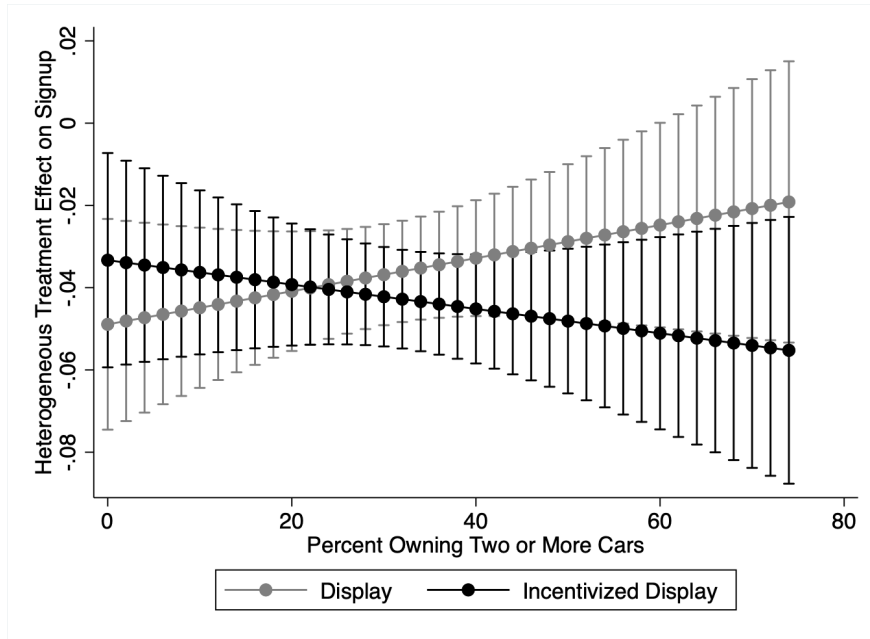


Figure A.8: Heterogeneous treatment effects by car ownership in the postcode sector

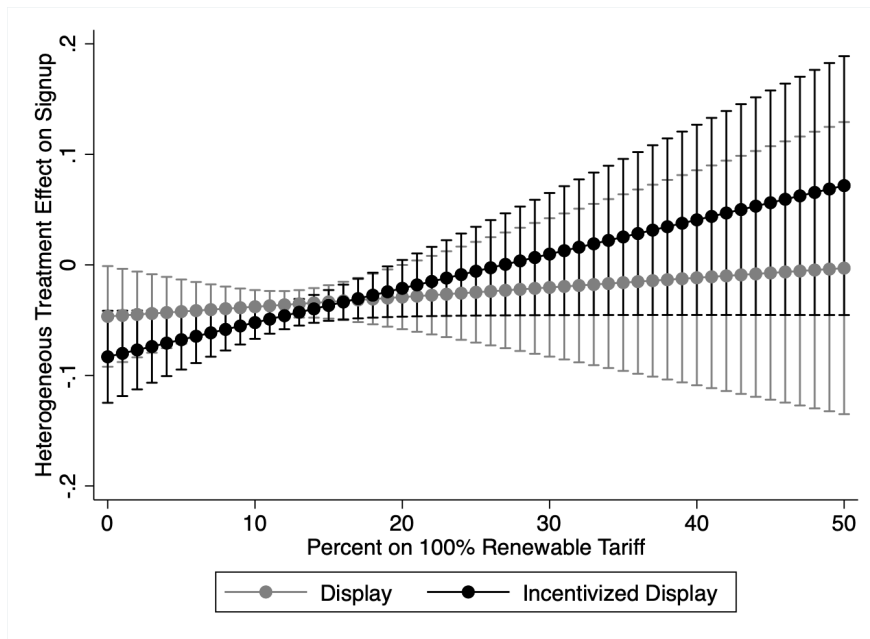


Figure A.9: Heterogeneous treatment effects by percent of households on 100% renewable energy tariffs in the postcode sector

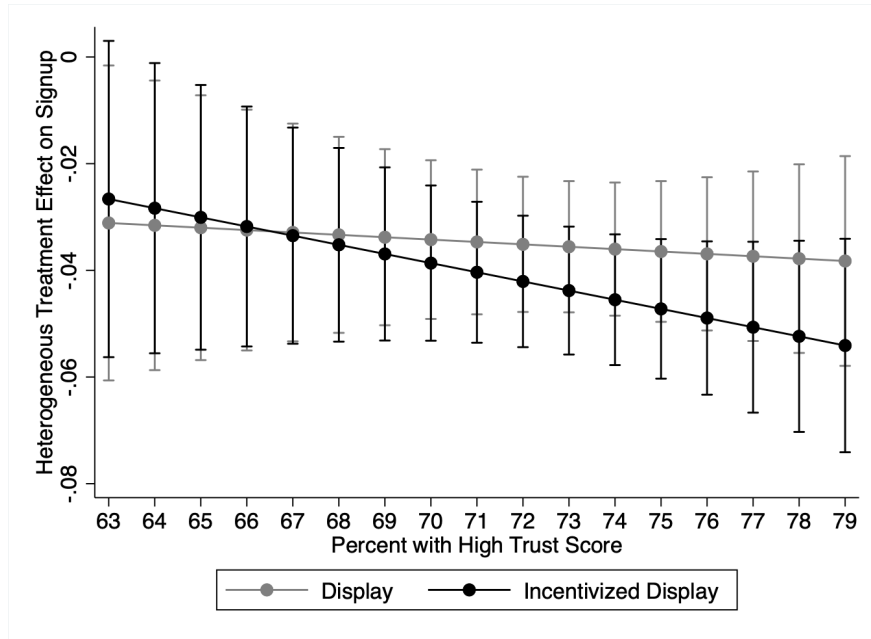


Figure A.10: Heterogeneous treatment effects by percent of individuals with a trust score of 5 or higher (on scale from 0-10)

E Additional analysis

As shown in Table A.9, we do not find a statistically significant difference in displaying behavior based on whether the individual (i) received a financial incentive (regardless of email received; column (1)), nor (ii) received the control email versus the email that described the treatment to which they had been assigned. Additionally, in line with the finding of no effect of the financial incentive on participation, we find no difference in self-reported displaying behavior between the first (79%) and second (81%) treatment arms (χ^2 -test, $p=0.36$)

Table A.9: Effect of Email and Treatment
Received on Displaying Material

	(1)	(2)
Incentivized Display	0.021 (0.024)	0.031 (0.033)
Display Email		0.036 (0.033)
Incentivized Display Email		0.015 (0.033)
Constant	0.774 (0.017)	0.756 (0.023)
Observations	1216	1216

Notes: The dependent variable in this regression is a dummy variable for having displayed the material (=1) or not (=0), and we report the regression using standard OLS, though the results are virtually identical using a logit regression. The reference category for the regression in column 1 is the group assigned to receive a material without any financial incentive; the reference category in column 2 is the group assigned to receive a material without a financial incentive (as per Display treatment), and who also received an invitation email that invited them to take part in a survey only (i.e. the same email received by the Control group). Given the factorial design, the interpretation of coefficients in column 2 mirrors that of a regression of material display behavior on the interaction between having received an email describing the assigned treatment with having been assigned to receive a financial incentive, where the interaction coefficient is -0.21 (shown here as the difference between receiving an invitation only mentioning the materials and an email mentioning both the materials and the financial incentive, controlling for assignment to receive a financial incentive).

F Emails sent to participants

Consent email

Figure A.11 depicts the consent email that was sent to the Control group and to half of the Display and Incentivized Display participants. The email text for all other emails sent throughout the initiative follow.

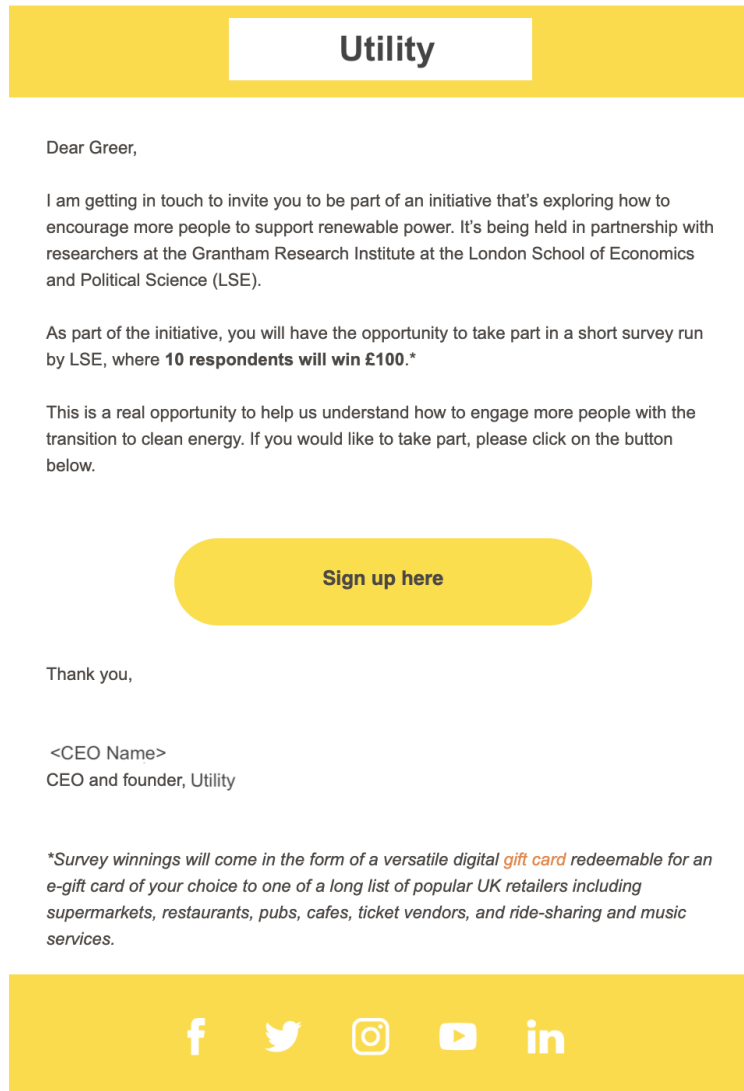


Figure A.11: Consent email for Control

Display:

Dear NAME,

I am getting in touch to invite you to be part of an initiative that's exploring how to encourage more people to support renewable power. It's being held in partnership with researchers at the Grantham Research Institute at the London School of Economics and Political Science (LSE). By signing up using the link below, you will receive a free garden sign or window sticker to display at home showing that your household is powered by 100 per cent renewable electricity. This will contain a promotional code that will give a £50 discount to any neighbors in your postcode sector who sign up with Utility because of your sign / sticker.

*As part of the initiative, you will also have the opportunity to take part in a short survey run by LSE, where 10 respondents will win £100.**

This is a real opportunity to help us understand how to engage more people with the transition to clean energy. If you would like to take part, please click here to sign up.

Thank you,

Utility CEO Email Signature

**Survey winnings will come in the form of a versatile digital Tango gift card redeemable for an e-gift card of your choice to one of a long list of popular UK retailers including supermarkets, restaurants, pubs, cafes, ticket vendors, and ride-sharing and music services."*

Incentivized Display

Dear NAME,

I am getting in touch to invite you to be part of an initiative that's exploring how to encourage more people to support renewable power. It's being held in partnership with researchers at the Grantham Research Institute at the London School of Economics and Political Science (LSE).

By signing up using the link below, you will receive a free garden sign / window sticker to display at home showing that your household is powered by 100 per cent renewable electricity. This will contain a promotional code that will give a £50 discount to any neighbours in your postcode sector who sign up with Utility because of your sign / sticker. And, for each neighbour who uses your promotional code, you will also receive £50 off of your next electricity bill.

Finally, as part of the initiative, you will have the opportunity to take part in a short survey run by LSE, where 10 respondents will win £100. This is a real opportunity to help us understand how to engage more people with the transition to clean energy. If you would like to take part, please click here to sign up.*

Thank you,

Utility CEO Email Signature

**Survey winnings will come in the form of a versatile digital Tango gift card redeemable for an e-gift card of your choice to one of a long list of popular UK retailers including supermarkets, restaurants, pubs, cafes, ticket vendors, and ride-sharing and music services.*

Reminder emails

Control

Dear NAME,

This is a reminder that you've been invited to take part in an initiative to promote clean energy, being held in partnership with the Grantham Research Institute at the London School of Economics (LSE).

*By signing up, you will be able to take a short survey run by LSE, where 10 respondents will win £100.**

This is a real opportunity to help us understand how to inspire more people to support clean energy. Registration is open for one more week. So if you would like to take part, please [click here to sign up](#).

Thank you,

Utility CEO Email Signature"

**Survey winnings will come in the form of a versatile digital Tango gift card redeemable for an e-gift card of your choice to one of a long list of popular UK retailers including supermarkets, restaurants, pubs, cafes, ticket vendors, and ride-sharing and music services.*

Display

Dear NAME,

This is a reminder that you've been invited to take part in an initiative to promote clean energy, being held in partnership with the Grantham Research Institute at the London School of Economics (LSE).

By signing up using the link below, you will receive a free garden sign / window sticker to display at home – showing that your household is powered by 100% renewable electricity. This will contain a promotional code that will give a £50 discount to any neighbours in <customer's postcode sector> who sign up with Utility because of your sign / sticker.

*Finally, you will also be able to take a short survey run by LSE, where 10 respondents will win £100.**

This is a real opportunity to help us understand how to inspire more people to support clean energy. Registration is open for one more week. So if you would like to take part, please [click here to sign up](#).

Thank you,

Utility CEO Email Signature

**Survey winnings will come in the form of a versatile digital Tango gift card redeemable for an e-gift card of your choice to one of a long list of popular UK retailers including supermarkets, restaurants, pubs, cafes, ticket vendors, and ride-sharing and music services.*

Incentivized Display

Dear NAME,

This is a reminder that you've been invited to take part in an initiative to promote clean energy, being held in partnership with the Grantham Research Institute at the London School of Economics (LSE).

By signing up using the link below, you will receive a free garden sign / window sticker to display at home – showing that your household is powered by 100% renewable electricity. This will contain a promotional code that will give a £50 discount to any neighbors in <customer's postcode sector> who sign up with Utility because of your sign / sticker. And, for each neighbour who uses your promotional code, you will also receive £50 off of your next electricity bill.

*Finally, you will also be able to take a short survey run by LSE, where 10 respondents will win £100.**

This is a real opportunity to help us understand how to inspire more people to support clean energy. Registration is open for one more week. So if you would like to take part, please click here to sign up.

Thank you,

Utility CEO Email Signature

**Survey winnings will come in the form of a versatile digital Tango gift card redeemable for an e-gift card of your choice to one of a long list of popular UK retailers including supermarkets, restaurants, pubs, cafes, ticket vendors, and ride-sharing and music services.*

Final Reminder (All)

Dear NAME,

*Further to the series of email invites we sent you in March, this is a final reminder to see if you would like to take part in an **initiative to promote renewable energy**, run in partnership with the Grantham Research Institute at the London School of Economics (LSE).*

This is a real opportunity to help us understand how to inspire more people to support clean energy, so if you would like to take part, please [click here](#) to sign up before the survey closes this Sunday (7 April) at 10pm.

Thank you,

Utility CEO Email Signature”

Thank you emails

Control

Dear NAME,

Thank you for signing up to our initiative to explore how more people can be encouraged to support renewable power in the UK. This has been set up as a joint partnership between Utility and the Grantham Research Institute of the London School of Economics (LSE).

More information will be emailed out to everyone participating in the initiative in the coming 3-6 months. Don't worry - if you leave Utility during this period, we will withdraw your consent to be part of the initiative and you won't receive any more communications about it.

If you have any questions about the initiative in the meantime, please visit our regularly updated FAQs. If you can't find an answer to your question here, feel free to get in touch with the project team at projectemail@lse.ac.uk

Finally, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility CEO Email Signature"

Display (Yard Sign)

Dear NAME,

Thank you for signing up to our initiative to explore how more people can be encouraged to support renewable power in the UK. This has been set up as a joint partnership between Utility and the Grantham Research Institute of the London School of Economics (LSE).

You will soon be receiving your garden sign in the post. We'd be grateful if you could display it somewhere within your property where it will be most visible to passers-by.

Please be aware that your sign will include a unique promotional code that provides members of your community with a discount off their first bill if they join Utility using that code. We'll let you know by email every time this happens.

We've made sure the sign is designed to be waterproof and weather resistant. It's also made of entirely recyclable materials, so please dispose of it responsibly.

Your sign will be ordered on 16 April and should reach you within a month. If you haven't received your sign by 31 May, please get in touch with the research team at projectemail@lse.ac.uk.

How to find out more about the initiative

If you have any questions about the initiative in the meantime, please visit our regularly updated FAQs. If you can't find an answer to your question here, feel free to get in touch with the project team at projectemail@lse.ac.uk.

Finally, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility CEO Email Signature"

Display (Window Cling)

Dear NAME,

Thank you for signing up to our initiative to explore how more people can be encouraged to support renewable power in the UK. This initiative has been set up as a joint partnership between Utility and the Grantham Research Institute of the London School of Economics (LSE).

You will soon be receiving your window sticker in the post. *We'd be grateful if you could display it somewhere within your property where it will be most visible to passers-by.*

Please be aware that your sticker will include a unique promotional code that provides members of your community with a discount off their first bill if they join Utility using that code. We'll let you know by email every time this happens.

We've made sure the sticker is designed to be waterproof and weather resistant. And that, when you want to remove it, it can be easily and cleanly peeled off.

Your sticker will be ordered on 16 April and should reach you within a month. If you haven't received your sticker by 31 May, please get in touch with the research team at projectemail@lse.ac.uk.

How to find out more about the initiative

If you have any questions about the initiative in the meantime, please visit our regularly updated FAQs. If you can't find an answer to your question here, feel free to get in touch with the project team at projectemail@lse.ac.uk.

Finally, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility CEO Email Signature

Incentized Display (Yard Sign)

Dear NAME,

Thank you for signing up to our initiative to explore how more people can be encouraged to support renewable power in the UK. This has been set up as a joint partnership between Utility and the Grantham Research Institute of the London School of Economics (LSE).

***You will soon be receiving your garden sign in the post.** We'd be grateful if you could display it somewhere within your property where it will be most visible to passers-by.*

*Please be aware that your sign will include a unique **promotional code that provides you with a £50 discount** off your Utility bill every time someone within your community joins Utility using that code, and they will receive a discount, too. We'll let you know by email every time this happens.*

We've made sure the sign is designed to be waterproof and weather resistant. It's also made of entirely recyclable materials, so please dispose of it responsibly.

Your sign will be ordered on 16 April and should reach you within a month. If you haven't received your sign by 31 May, please get in touch with the research team at projectemail@lse.ac.uk.

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Finally, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility CEO Email Signature

Incentivized Display (Window Cling)

Dear NAME,

Thank you for signing up to our initiative to explore how more people can be encouraged to support renewable power in the UK. This has been set up as a joint partnership between Utility and the Grantham Research Institute of the London School of Economics (LSE).

You will soon be receiving your window sticker in the post. We'd be grateful if you could display it somewhere within your property where it will be most visible to passers-by.

Please be aware that your sticker will include a unique **promotional code that provides you with a £50 discount** off your Utility bill every time someone within your community joins Utility using that code, and they will receive a discount, too. We'll let you know by email every time this happens.

We've made sure the sticker is designed to be waterproof and weather resistant. And that, when you want to remove it, it can be easily and cleanly peeled off.

Your sticker will be ordered on 16 April and should reach you within a month. If you haven't received your sticker by 31 May, please get in touch with the research team at projectemail@lse.ac.uk.

How to find out more about the initiative

If you have any questions about the initiative in the meantime, please visit our regularly updated FAQs. If you can't find an answer to your question here, feel free to get in touch with the project team at projectemail@lse.ac.uk.

Finally, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility CEO Email Signature

Notification of materials distribution emails

Dear Valued Customer,

Thank you once again for taking part in our joint research initiative to engage more people within your community and lead them to switch to renewable power.

We apologise the programme has taken longer to activate than anticipated, and we're very pleased to say that we're now posting out your pack this week which will contain clear instructions on how to get started.

In the meantime, please visit the project FAQ page if you have further questions.

Many thanks,

Utility Team and the Research Team at the LSE

Letters accompanying the materials

Yard Sign

Thank you once again for taking part in our joint research initiative, to see if we can engage more people within your community and lead them to switch to renewable power. Your garden sign is enclosed.

Included with this letter is the sign (and stake) that we would like to ask you to display at home so that we can reach the goals of this research.

The referral code is now active, so you can put it up as soon as is convenient. The code will be valid until 30 April 2020, although you can of course remove the sign beforehand. To ensure the validity of the study, we would be grateful if you could keep the sign up for at least four months. To maximise the chance of success, it would be great if you could choose a spot that's most visible to passers-by or visitors, such as a front garden or a street facing window.

The sign is waterproof and weather resistant, so you should be able to keep it on display for as long as you'd like. If you want to remove it, the sign is made of entirely recyclable material to allow you to dispose of it responsibly.

Here are some simple instructions for posting your sign:

Step 1: Remove the double sided tape from the ground stake.

Step 2: Apply to the reverse of sign and push into the ground.

We'll send you an email in a few weeks to check if everything's gone well with displaying the sign.

Finally, thank you for continuing to support Utility. It's people like you who are helping us build a cleaner, greener future.

Utility Team and the Research Team at the LSE

Window Cling

Thank you once again for taking part in our joint research initiative, to see if we can engage more people within your community and lead them to switch to renewable power. Your window sticker is enclosed.

Included with this letter is the window sticker that we would like to ask you to display at home so that we can reach the goals of this research.

The referral code is now active, so you can put the sticker up as soon as is convenient. The code will be valid until 30 April 2020, although you can of course remove the sticker beforehand. To ensure the validity of the study, we would be grateful if you could keep the sticker up for at least four months. To maximise the chance of success, it would be great if you could place it in a spot that's most visible to passers-by or visitors, such as a street facing window.

The sticker needs to be applied from the inside and has been designed to be easily and cleanly removed. Here are some simple instructions for applying your sticker:

Step 1: Make sure the surface area where you want to apply the sticker is clean.

Step 2: Peel the protective paper from the label.

Step 3: Apply the sticker to the surface starting at the top and smoothing downwards, releasing the air bubbles.

We'll send you an email in a few weeks to check if everything's gone well with displaying the sticker.

Finally, thank you for continuing to support Utility. It's people like you who are helping us build a cleaner, greener future.

Utility Team and the Research Team at the LSE"

Checking-in email

Dear Customer,

Thank you again for signing up to our initiative to explore how to encourage others to support renewable power in the UK.

By now you should have received your display material in the post, and we'd like to make sure that the process of receiving and displaying your new material has been smooth for you. We'd appreciate if you could click on one of the following options to let us know:

- I have received the package and have displayed the material*
- I have received the package but I have not yet displayed the material*
- I have not yet received the package*

Some customers have emailed us with pictures of their materials on display – we've loved it! If you have any pictures you'd like to share, please send them to projectemail@lse.ac.uk.

If you have any further questions about the initiative, please visit our FAQs. If you can't find an answer to your question here, feel free to get in touch with the research team at the email address shown above.

Once again, thank you for continuing to support Utility. It's people like you who are helping us achieve our vision of building a cleaner, greener future.

Utility Team and the Research Team at the LSE

G Debrief Survey Questionnaire

Control Questionnaire

Thank you for taking the time to complete this brief survey. We'd like to begin by learning a little bit about your neighborhood.

Roughly how many years have you lived in your current neighbourhood?

• _____

How strongly do you feel you belong to your immediate neighbourhood?

Very strongly

Fairly strongly

Not very strongly

Not at all strongly

How often do you chat to your neighbours, more than to just say hello?

On most days

Once or twice a week

Once or twice a month

Less than once a month

Never

Don't have any neighbours

Thinking about the people who live in this neighbourhood, to what extent do you believe they can be trusted?

Many of the people can be trusted

Some of the people can be trusted

A few of the people can be trusted

None of the people can be trusted

Just moved here

Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

Most people can be trusted

Need to be very careful

Finally, we'd like to learn a bit more about you.

What is your gender?

Male

Female

Other

What is your age?

Under 18

18-24

25-34

35-44

45-54

55-64

65-74

75-84

85 or older

Not including yourself, please indicate the NUMBER of household members falling into the following age categories:

Under 18 _____

18-34 _____

35-64 _____

65 or older _____

How often do you...

Decide not to buy something because you feel it has too much packaging?

Always

Very often

Quite often

Not very often

Never

N/A (can't do this)

Buy recycled paper products such as toilet paper or tissues?

Always

Very often

Quite often

Not very often

Never

N/A (can't do this)

Take your own shopping bag when shopping?

Always

Very often

Quite often

Not very often

Never

N/A (can't do this)

Do you consider yourself an environmentalist?

- Yes
- No

What is your highest level of education?

- No formal education
- Primary school
- Secondary school
- Higher education (University, college or equivalent)

What is your employment status?

- Employed
- Self-employed
- House person or carer
- Student
- Retired
- Unemployed
- Unable to work (e.g. disability)
- Other

Which phrase best describes the area where you live?

- Big city
- Suburbs or outskirts of a big city
- Town or a small city
- Country village
- Farm or home in the countryside

Which of the following groups represents your total household pre-tax income (i.e. your personal income, or both you and your partners combined income if cohabiting)?

Please include income from earnings, self-employment, benefits, pensions, and interest from savings. (Note that all survey responses are anonymous and confidential.)

- Below 10,000 per year (below 199 per week)
- 10,000 - 16,000 per year (241 - 308 per week)
- 16,000 - 19,999 per year (309 - 389 per week)
- 20,000 - 24,999 per year (390 - 489 per week)
- 25,000 - 34,999 per year (490 - 679 per week)
- 35,000 - 44,999 per year (680 - 869 per week)
- 45,000 - 59,999 per year (870 - 1,149 per week)
- 60,000 - 79,999 per year (1,150 - 1,549 per week)

Over 80,000 per year (over 1,550 per week)

I'd prefer not to say.

If there was a Parliamentary election today, which party would you most likely vote for?

Conservative

Labour

Scottish National Party

Liberal Democrat

Democratic Unionist Party

Sinn Fin

Plaid Cymru

Green Party

Other: _____

Thank you for taking our survey - we really appreciate your time!

If you have any additional questions or comments, please feel free to leave them below.

Treatment Questionnaire

Thank you for taking the time to complete this brief survey.

As part of the initiative, did you receive a sign or window cling?

Yes (sign)

Yes (window cling)

No

If the answer to the question "As part of the initiative, did you receive a sign or window cling?" was "Yes (sign)" or "Yes (window cling)":

Did you display your sign/window cling?

– Yes

– No Depending on the answer to the previous question, "sign" or "window cling" was displayed. The same applies to the next question.

Could you please kindly indicate why you have not displayed your sign/window cling by checking the relevant box(es) below?

I do not have a place within my property to display my materials that is visible to passersby.

I previously displayed my material but it has been damaged by weather or pests.

I do not like the way the material looks.

I did not realise that I had signed up to receive materials (please elaborate below): _____

Other _____

If the answer to the first question was “No”:

We are sorry to hear you haven’t received your material. So that we may understand why this happened and how to better serve our participants in the future, please kindly check the box(es) below that apply:

I have moved home since signing up to the study.

I do not have a designated place within my property to receive packages.

Other _____

If the answer to the question “Did you display your sign/window cling?” was “Yes (sign)”:

Where did you display your sign?

Front garden

Back garden

Garage

Balcony

Street-facing window

Somewhere else (please explain, including floor number where applicable): _

If the answer to the question “Did you display your sign/window cling?” was “Yes (window cling)”:

Where did you display your window cling?

Street-facing window

Courtyard-facing window

Mailbox

Somewhere else (please explain, including floor number where applicable):

If the answer to the question “Where did you display your sign?” was “Balcony” or “Street-facing window” or the response to the question “Where did you display your window cling?” was “Street-facing window” or “Courtyard”:

Please select the floor on which you displayed your sign/window cling from the dropdown menu below:

Basement level

Ground floor

Floor 1

Floor 2

Floor 3

Above floor 3

If the answer to the question “Where did you display your window cling?” was “Mailbox”:

Is your mailbox visible to the public or only to other residents of your building?

Public

Residents in my building only

Other _____

Did you display your sign/window cling in a location that was easily visible to passersby?

Yes

No

If the answer to the question “Did you display your sign/window cling in a location that was easily visible to passersby?” was “Yes”:

Considering the location of your dwelling and of your displayed sign/window cling, what is your best guess of the number of passersby to whom your sign/window cling would have been visible in a given week? If the response to the question “Did you display your sign/window cling in a location that was easily visible to passersby?” was “Yes”:

To the best of your memory, on which date did you put your sign/window cling on display? (Note that it was put in the post in early June 2019.)

If the answer to the question “Did you display your sign/window cling in a location that was easily visible to passersby?” was “Yes”:

Is your sign/window cling still on display?

Yes

No

If the answer to the question “Is your sign/window cling still on display?” was “Yes”:

Is it still in good condition?

Yes

No (please describe briefly)

If the answer to the question “Is your sign/window cling still on display?” was “No”:

When did you take down your sign/window cling?

If the answer to the question “Is your sign/window cling still on display?” was “No”:

Could you please let us know why the sign/window cling is no longer on display?

– Damaged (destroyed by pests, weather, etc.)

- Stolen
- Neighbor complaints
- Simply decided I no longer wanted it on display
- Other _____

If the answer to the question “Did you display your sign/window cling in a location that was easily visible to passersby?” was “Yes”:

What did you primarily hope to achieve by displaying the sign/window cling?

Displaying may encourage others to adopt renewable energy as well, which would have environmental benefits.

I love Good Energy, and this is the least I can do to support them the same way they’ve supported me.

I want others to know that my dwelling is powered by 100% renewable energy.

I was interested in the financial incentives associated with the initiative.

For all options that were not selected:

Did any of these other motivations factor into your decision to display?

- Displaying may encourage others to adopt renewable energy as well, which would have environmental benefits.

I love Good Energy, and this is the least I can do to support them the same way they’ve supported me.

I want others to know that my dwelling is powered by 100% renewable energy.

I was interested in the financial incentives associated with the initiative.

Other (please explain):

Have you or anyone else in your household sent the discount code to friends, family, or colleagues via text, email, photo, etc.?

- Yes (please state how many below) _____
- No

We would now like to learn a little bit about your neighborhood.

Roughly how many years have you lived in your current neighbourhood?

- _____

How strongly do you feel you belong to your immediate neighbourhood?

Very strongly

Fairly strongly

Not very strongly

Not at all strongly

How often do you chat to your neighbours, more than to just say hello?

On most days

Once or twice a week

- Once or twice a month
- Less than once a month
- Never
- Don't have any neighbours

Thinking about the people who live in this neighbourhood, to what extent do you believe they can be trusted?

- Many of the people can be trusted
- Some of the people can be trusted
- A few of the people can be trusted
- None of the people can be trusted
- Just moved here

Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

- Most people can be trusted
- Need to be very careful

Finally, we'd like to learn a bit more about you.

What is your gender?

- Male
- Female
- Other

What is your age?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 85 or older

Not including yourself, please indicate the NUMBER of household members falling into the following age categories:

- Under 18 _____
- 18-34 _____
- 35-64 _____
- 65 or older _____

How often do you...

- Decide not to buy something because you feel it has too much packaging?

Always
Very often
Quite often
Not very often
Never
N/A (can't do this)

Buy recycled paper products such as toilet paper or tissues?

Always
Very often
Quite often
Not very often
Never
N/A (can't do this)

Take your own shopping bag when shopping?

Always
Very often
Quite often
Not very often
Never
N/A (can't do this)

Do you consider yourself an environmentalist?

- * Yes
- * No

What is your highest level of education?

No formal education
Primary school
Secondary school
Higher education (University, college or equivalent)

What is your employment status?

Employed
Self-employed
House person or carer
Student
Retired
Unemployed
Unable to work (e.g. disability)
Other

Which phrase best describes the area where you live?

Big city

Suburbs or outskirts of a big city

Town or a small city

Country village

Farm or home in the countryside

Which of the following groups represents your total household pre-tax income (i.e. your personal income, or both you and your partners combined income if cohabiting)?

Please include income from earnings, self-employment, benefits, pensions, and interest from savings. (Note that all survey responses are anonymous and confidential.)

Below 10,000 per year (below 199 per week)

10,000 - 16,000 per year (241 - 308 per week)

16,000 - 19,999 per year (309 - 389 per week)

20,000 - 24,999 per year (390 - 489 per week)

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60,000 - 79,999 per year (1,150 - 1,549 per week)

Over 80,000 per year (over 1,550 per week)

I'd prefer not to say.

If there was a Parliamentary election today, which party would you most likely vote for?

Conservative

Labour

Scottish National Party

Liberal Democrat

Democratic Unionist Party

Sinn Fin

Plaid Cymru

Green Party

Other: _____

Thank you for taking our survey - we really appreciate your time!

If you have any additional questions or comments, please feel free to leave them below.
