

# ‘Nudging’ responses to marketing emails: Evidence from London Fireworks Campaign

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## Abstract

This study evaluates the efficiency of ‘nudging’ in a natural experiment conducted around London New Year’s Eve Fireworks campaign. We measure the click-through rates in response to various versions of the email sent on behalf of the Mayor of London. The results demonstrate that crafting marketing messages using the behavioural triggers of specificity, social proof and reciprocity can bring about an uplift in response rates to email communications compared to control groups which receive a standard message. Our results contribute to the empirical evidence on the validity of nudge theory.

**JEL Classification:** C90, C93.

## Keywords

natural experiment — nudges

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## Introduction

Given people’s habits and cognitive boundaries, the choice architecture techniques can help people make beneficial decisions for society and themselves (Balz, Sunstein & Thaler, 2014; Szaszi et al., 2018). These ideas, popularised by Thaler & Sunstein (2008), gave impulse to multitudinous empirical research on the efficiency of choice architecture interventions. ‘Nudging’ decision-makers toward more beneficial options through a particular design of the available choices have been applied in various domains, including experimental economics and public policy (see, for example, Hoffman et al., 1996; Brañas-Garza, 2007; Apesteguia et al., 2013; Yang et al., 2013; Schlüter & Vollan, 2015; Sanders & Smith, 2016; and Sanders, 2017), personal finance (see, for example, Angel, 2018), medicine (see, for example, Bronchetti et al., 2015), education (Bizon, 2018), marketing (see, for example, de Wijk et al., 2016), energy consumption (examples are Gillingham & Tsvetanov, 2018 and Momsen & Stoerk, 2014), and eating habits (see, for example, Nørnberg et al., 2016 for a review). Many studies evaluate the efficiency of ‘nudging’ in the lab where the external validity of the experiment is frequently dubious due to the small sample size (Szaszi et al., 2018).

This study investigates the efficiency of ‘nudging’ on consumer response rates in a ‘real world’ context. We conduct the experiment around the Mayor of London New Year’s Eve Fireworks Campaign, a high profile event with complex priorities in terms of the messaging<sup>1</sup>. The trial aimed to fulfil

two overall objectives: first, to minimise the burden on social media and public liaison teams of queries from members of the public by pre-emptively directing individuals to the comprehensive list of Frequently Asked Questions (FAQs) webpage; and second, to help to ensure that all tickets are sold quickly for the event, thus allowing the marketing campaign to focus as early as possible on other communications such as those aimed to increase public safety.

Both of these objectives could be met by encouraging a higher click-through rate on email communications for the event. In particular, the trial aimed to encourage clicks to the frequently asked questions page (FAQs) referenced in the email sent on behalf of the Mayor of London.

The experiment used behavioural triggers to formulate messaging, presenting the same choice in different ways that have been proven by existing research to impact response rates. The online process and large sample size of prospective ticket buyers gave us the advantage to test different communication approaches in a way that was easily trackable and free to implement.

Arguably, clicking on a link within an email requires very little thought, considering the volume of emails that many people receive daily. When deciding whether to react on the email, the human brain can rely on established patterns of behaviour in an attempt to reduce cognitive effort (Shah and Oppenheimer 2008) and switch to instinctive, automatic mode

<sup>1</sup>London’s New Year Eve fireworks are watched by millions of people worldwide. The net expenditures associated with the event accounted for more than 2 million pounds in 2018. According to the information on the Mayor of London’s website, “The event’s increased popularity over

the years, drawing hundreds of thousands of people to central London, resulted in the need to introduce ticketing in 2014, in order to combat safety concerns. The ticketing charge covers only the costs of implementing the ticking system and additional infrastructure required to manage it” ([www.london.gov.uk/decisions/md2243-new-years-eve-2018](http://www.london.gov.uk/decisions/md2243-new-years-eve-2018)).

of operation known as System 1 (Kahneman, 2012). It is this 'thinking fast' which influences many of our everyday actions, often including our response to marketing messages and consumer decision-making (Samson and Voyer, 2012). In this case, the decision to click or not to click on the email might be close to random.

Many email characteristics can potentially influence the response rates by the readers: the timing of opening, the colours and general scheme, the availability of pictures, or the location of links in the email (Murphy, Hofacker & Mizerski, 2006). The wording used in the email can also influence quick decisions of the reader regarding the response to the email. By making small tweaks to the text of the email, it is possible to 'frame' the consumer choice in a different, more appealing, way (Tversky & Kahneman, 1981). In our experiment, we keep the colour scheme and the location of links in the email the same across different treatments, and we vary the text of the link to the FAQs page. The variations of the text include mentioning of the specific factors associated with the event (treatment 1); social aspects of the event (treatment 2); and emphasis on the hard work of the City Call (treatment 3). We then evaluate the efficiency of 'nudging' on the click-through rate at the FAQs link.

We find that all the experimental treatments brought about a significant uplift in the proportion of clicks to the FAQs page. An increase in response rates was statistically and economically significant. In particular, if all the emails sent used the most successful version (which was the version mentioning the social aspects of the event), the response rate would be twenty-four per cent higher. Thus, our treatments, elaborated based on the 'nudge' theory (Thaler & Sunstein, 2008), have helped to achieve the objectives of the Mayor of London, potentially reducing the public expenses associated with the event and increasing public safety.

We argue that the effects we found are robust. First, we have a large number of observations, around six thousand per treatment. Second, we have two 'control' groups, where the emergence of the second group was outside the control of the experiment and resulted from the decision by City Hall to send an additional version of emails. In both 'control' groups, the individuals received the email with the standard text on the FAQs link, even though the tone and the subject line of the emails differed across the two groups. The results obtained in the treatment groups are significantly different from the results obtained in either of the control groups, while the results obtained in the two control groups are not significantly different from each other, even though the sample sizes are very large.

The remainder of the paper is organised as follows. Section 2 describes the experimental design. Section 3 discusses the results. Section 4 concludes.

## Experimental design

The trial was carried out at London City Hall. The main overall objective was to minimise the burden on social media and

public liaison teams of queries from members of the public by pre-emptively directing individuals to the comprehensive list of Frequently Asked Questions (FAQs) available. Another overall objective was to help to ensure that all tickets are sold quickly, in this way contributing to greater public safety by allowing the marketing campaign to focus as early as possible on communicating that people without a ticket should not attend the event.

The experiment was conducted via email communications to a database of subscribers to New Year's Eve ticket alerts. An email experiment was preferred to a website experiment as it is more easily controllable. A website experiment may be confounded by different sources of traffic, as individuals would be included in the analysis whether they had come from a Facebook advert, another website, an email or had just typed in the web address. By sending emails, we were able to keep track of which advertising formats the subject had been exposed to immediately prior to their actions.

One week before the New Year's Eve tickets went on sale, we sent an email reminding people of the date of the ticket release and encouraging them to click to read the FAQs section of the website to learn more about the event. The untreated text for the 'one week to go' emails included two versions, one formal and one informal. The informal version was added at the request of City Hall staff, and therefore it was not a designed aspect of the experiment. In addition to the variation in tone, this email also had a different subject line; again, this was outside of the control of the experiment. Table 1 presents the complete untreated texts for the formal and informal versions. It should be mentioned that the email communication contained two links, a link to the main campaign page and a link to the FAQs page (below the link to the main campaign page), as can be seen from Table 1. Our treatments aimed to influence the readers' decision to click on the FAQs link (that is, on the second link in the email).

We used the formal version of the email as a control to compare against three interventions. The treatment versions of the email were identical to the control one apart from the variation in the call to action text on the FAQs link. In the treated call to action texts, we intended to 'nudge' the reader to click on the link. In general, there is a variety of possible alterations in the text that could serve as 'nudging'. In constructing our treated versions, we relied on specific behavioural triggers that have been discussed in the literature, as follows:

- *Specificity* – mentioning some factors particular to the event advertised in the email may prompt people to learn more about these factors. In applying this trigger, we exploited the nature of 'nudging' as a "context-specific approach to behaviour change" (Hansen et al., 2016). In particular, we added the examples of frequently asked questions in which the reader could be interested (such as "can I bring my own food and drink?") to the call for action text to prompt the reader to click on the link.

Control	Informal
<p><b>Subject line: London NYE Fireworks: countdown to tickets begins!</b></p> <p>Tickets to London New Year's Eve Fireworks will go on sale a week today.</p> <p>Remember, the only way to be there on the night is with a ticket. Each person can book up to four tickets at a cost of £10 each. Tickets will be available from 12-noon (BST), Friday 21 October at: <a href="http://www.london.gov.uk/nye">www.london.gov.uk/nye</a></p> <p><b>View our FAQs for more information</b></p> <p>It's the hottest New Year's Eve celebration in London. Put the date in your diary now so you don't miss out.</p>	<p><b>Subject line: Psst, we heard you wanted fireworks...</b></p> <p>Hey, remember when we promised you'd be first to know when tickets to London New Year's Eve Fireworks go on sale? Well here's your seven-day warning. Yes, in just one week, you can book your ticket to London's most sizzling New Year's Eve celebration.</p> <p>If you haven't been yet, it should be number one on your bucket list of things to do in London. No ifs, no buts!</p> <p>To get the best view, get a ticket. Tickets will be available from 12-noon (BST), Friday 21 October time at: <a href="http://www.london.gov.uk/nye">www.london.gov.uk/nye</a></p> <p>Without a ticket you won't be able to be there on the night.</p> <p><b>View our FAQs for more information</b></p>
<p><b>Note:</b> This table reports the content of the emails sent on behalf of the Mayor of London. The left panel reports the 'Control' version; the right panel reports the 'Informal' version, which was not a designed part of the experiment.</p>	

**Table 1.** Control version of the email and its informal version

- *Social proof* - descriptive social norms signal appropriate behaviour and are likely to be followed (Dolan et al., 2012), so highlighting patterns of behaviour around New Year's Eve ticket purchasing may be a powerful influence on the decision to read more about the event. The impact is likely to take the form of informational cues rather than normative, and comply with public acceptance (Aronson et al., 2005). In particular, we mentioned that the FAQs contain the information on "viewing areas to decide which is most convenient for you and your friends".
- *Reciprocity* - social exchanges can be positive or negative (Fehr & Gächter, 2000). In our case a sense of 'returning the favour' or obligation to respond to a concession made (Cialdini et al., 1975) might be created by emphasising the hard work City Hall puts into making the fireworks an enjoyable and safe experience. In particular, the call for action in this treatment included the following text: "We want you to have the best possible NYE, so we've spent time putting together answers to questions you might have about the event".

Table 2 describes these variations in text and provides a rationale behind the choice of these particular messages. Thus, in total, we had five different email versions: an informal version, a formal version (control), and three treatments of the control version.

The subscribers' database size was approximately 90,000 (before it was filtered by the email system to remove any invalid addresses), and subjects were randomly allocated to

treatments.

After the emails were sent out, we tracked the customer activity with Pure 360, the email service provider. The information we obtained through tracking was the following: whether the email was open or no; if it was open, whether the reader clicked on the links within the email; in the case of clicks, we tracked whether the clicks were on the FAQs page (the purpose of the experiment) or the campaign page, or both. We have no information on the personal characteristics of subscribers, and we obtained only aggregate data on the opening rate and click-through rates.

The customers differed in their timing of email opening. However, two weeks after the emails were sent out, there were no further significant alterations in the aggregate statistics (e.g., most of the customers had opened and read the email or had deleted or otherwise disregarded the email). We use these final aggregate statistics to evaluate whether the proportion of clicks on the FAQs page was higher in the treatment versions compared to the control version of the email.

## Results and discussion

Table 3 reports the summary statistics from Pure 360, the email service provider. We rely on these statistics to analyse the success of our treatments. First, we notice that the rates of opens did not vary much among different versions of the emails (apart from the Informal condition which had a different subject line), but this was to be expected since influencing opens rates was not an objective of the experiment.

It may be the case that the different subject line for the informal version of the email ('Informal' group of emails)

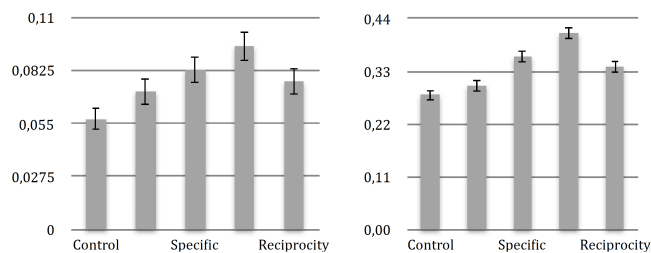
Treatments	Call to action text variation	Rationale
1 (Control)	View our FAQs for more information.	Approved copy.
2 (Informal)	View our FAQs for more information.	Approved copy (this version varied in tone but the call to action was the same).
3 (Specific)	View our FAQs for answers to questions like 'can I bring my own food and drink' or 'what happens if it rains?'	May help to close the gap between intentions and actual behaviour by prompting people to identify barriers to action and develop a plan to address them.
4 (Social)	View our FAQs for information on the five viewing areas to decide which is most convenient for you and your friends.	Social relationships strongly influence behaviour. Drawing attention to networks may encourage collective action.
5 (Reciprocity)	View our FAQs: We want you to have the best possible NYE, so we've spent time putting together answers to questions you might have about the event.	People have a strong instinct for reciprocity, mutual support and fairness – we are more likely to give back when we have received something ourselves.

**Note:** This table reports the message on the FAQs link for each of the treatments and briefly explains the rationale behind each of the messages.

**Table 2.** Variations in the call for action on FAQs link

caused the percentage of opens to be lower in comparison to other versions (we observe a ten per cent reduction in opening the informal version of emails compared with the control group,  $p < 0.0001$ ).

All of the experimental treatments significantly increased the propensity to click on the email (either of the links). Figure 1 reports the proportions of clicks on the FAQs page out of total opened emails (left panel) and the proportions of clicks on the FAQs page out of total clicks on opened emails (right panel).



**Note:** This figure reports the proportions and their confidence intervals for the proportions of clicks on the FAQs page out of total opened emails (left panel) and for the proportions of clicks on the FAQs page out of total clicks on opened emails (right panel).

**Figure 1.** Proportion of clicks to the FAQs page

Figure 1 suggests that all of the treatments resulted in a higher proportion of clicks on the FAQs link, implying that the intervention was successful. Table 4 (in the Appendix) reports z-statistics and corresponding p-values from the formal tests of proportions comparison between different groups for three different measures of click-through rate: the proportion of clicks on FAQs link out of total emails that were opened; the ratio of total clicks (including both clicks on FAQs link

and clicks on the link to campaign page) to the number of emails that were opened; and the ratio of clicks on FAQs link to the total number of clicks on the opened emails. For all three measures, the treatment groups exhibit a significantly higher proportion of clicks compared to the control group. The 'Informal' group (the design of which was not under our control and therefore did not formally constitute a part of the experiment) is characterised by the click-through rate and the ratio of clicks on FAQs link to total clicks which are not statistically different from those in the control group.

Comparison across treatments suggests that the most effective message was the 'Social' condition. The measures of click-through rate are significantly higher for this group compared with any other treatment group. The 'Social' message reminded people of the social aspect of the event and the need to consider the logistics of attending with friends. It may have been the reference to networks and collective action which encouraged a higher response to this message, or simply that the mention of viewing areas was particularly efficient.

Overall, the results suggest that the interventions contributed 580 additional clicks on the FAQs link. If only the most successful 'Social' copy had been used for all emails, we would have seen 547 additional clicks on the FAQs link.

In practical terms, prompting potential customers to spend time reading the FAQs at that early stage in the campaign could potentially reduce the number of queries City Hall received about the event. The experiment has, therefore been successful in the broader sense, fulfilling the overall objectives of the Mayor of London.

## Conclusion

We conducted a natural experiment involving the use of behavioural messaging to increase the number of clicks on emails as part of the Mayor of London's New Year's Eve

Treatments	Data count (sent)	Total opens	Total clicks	Click through rate	FAQ clicks % of total
1 (Control)	13,207	6,157	1,262	20.50%	28%
2 (Informal)	13,100	5,499	1,316	23.93%	30%
3 (Specific)	13,162	6,144	1,412	22.98%	36%
4 (Social)	13,190	6,102	1,415	23.19%	41%
5 (Reciprocity)	13,118	5,981	1,346	22.50%	34%

**Note:** This table reports the summary statistics which was extracted from Pure 360, the email service provider, two weeks after the emails had been set out.

**Table 3.** Summary data from Pure 360, the email service provider

Fireworks marketing campaign. We found that the response rates were increased by 'nudges' brought about by changes in wording that are simple and free to implement.

Our study is an example where the choice architecture technics were employed for practical purposes in the 'real world' context and have proven to be useful. Therefore, our results contribute to the empirical evidence on the validity of nudge theory. Moreover, the research reported in this paper has helped to achieve the objectives of London City Hall. In particular, we have managed to encourage customers to read the FAQs page for the event and thus, potentially helped to reduce the expenses associated with public queries (saving taxpayers' money) and to increase safety of the event (by allowing the marketing campaign to concentrate on safety instructions rather than on answering information queries).

This work could easily be applied to almost any 'real world' scenario where a purchase is being made and a marketing email being sent to encourage this action. More specifically, our approach could be applied to public policy communications aimed at disseminating information and encouraging participation.

## Appendix

See Table 4 in page 16.

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Groups compared	FAQs clicks as prop of total opens		Total clicks as prop of total opens		FAQs clicks as prop of total clicks	
	z-value	p-value	z-value	p-value	z-value	p-value
Control-Informal	-3.17	0.0015	-1.12	0.2636	-1.12	0.2636
Control-Specific	-5.51	0.0000	-4.42	0.0000	-4.42	0.0000
Control-Social	-7.87	0.0000	-7.05	0.0000	-7.05	0.0000
Control-Reciprocity	-4.22	0.0000	-3.31	0.0010	-3.31	0.0010
Informal-Specific	-2.20	0.0276	-3.33	0.0009	-3.33	0.0009
Informal-Social	-4.51	0.0000	-6.00	0.0000	-6.00	0.0000
Informal-Reciprocity	-0.96	0.3352	-2.21	0.0272	-2.21	0.0272
Specific-Social	-2.40	0.0164	-2.73	0.0064	-2.73	0.0064
Specific-Reciprocity	1.26	0.2062	1.10	0.2713	1.10	0.2713
Social-Reciprocity	3.64	0.0003	3.80	0.0002	3.80	0.0002

**Note:** Each entry reports z-statistic or p-value corresponding to the null hypothesis: Proportion in 1st group = Proportion in 2nd group, for the pair of two groups reported in the corresponding row of the first column.

**Table 4.** Tests of differences in proportions between groups

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