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# Normification: Using Crowdsourced Data to Affect Third-Party Change

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**Abstract**

Previous work [7] has shown how smartphone applications can support community activism groups by enabling crowdsourced data collection. In this paper we theorize that the data collected by the app can then be used to bring about positive environmental behavior change by illustrating the adoption of new social norms, a process we term normification. We provide a theoretical framework for how this may be accomplished, both in general terms and specifically with examples from the Close the Door campaign.

**Author Keywords**

Community activism; sustainability; participatory urbanism, crowdsourcing; behavior change

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**Introduction**

The Close the Door (CTD) campaign is a grassroots community activism group that seeks to reduce carbon emissions by encouraging shops to close their doors when running their heating system. By doing so, shops can reduce their energy bills by up to 50% and save up

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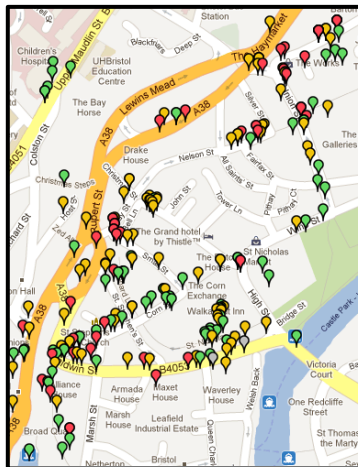
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**Figure 1.** Map interface of the Close the Door app.



**Figure 2.** Map section showing locations of rated shops in Bristol.

to 10 tons of carbon annually [2]. However, this is a classic “I will if you will” environmental problem: shops fear losing customers if they close their doors while their competition’s remain open. As a result, norms have developed around leaving doors open regardless of weather and energy wasted. This has the knock-on effect of making open doors appear normal to customers. One-third of the 48 participants surveyed during the initial phase of the CTD study agreed that they were more likely to enter a shop if the door was open. This is mirrored in discussions with shop employees; when querying why doors are left open, CTD volunteers often receive the response: “Customers will not know that we’re open if the door is closed.” This then becomes a self-perpetuating cycle of open doors and energy waste

Current practice by the Close the Door campaign seeks to alter opinion by sending volunteers into the community to speak to shopkeepers and employees about the financial and environmental benefits of keeping shop doors shut; they also target the head offices of chain shops so that “closed-door” policies can be instituted. Our original study [7] developed a prototype smartphone application where users recorded whether a shop had its door open or closed (Figure 1). This distributed approach to data collection provided the campaign with a more complete view of a shop’s behavior and covered a wider area than previously possible (Figure 2). Collecting the necessary data in this way allows the campaign to better use their time and resources by concentrating on advocacy activities rather than data collection.

We seek to take this a step further by using the opened/closed status to develop a “Close the Door

score” to quantify each shop’s behavior, which can be displayed on maps in terms of color coding (Figure 2). It allows both users of the app and CTD organizers to tell at a glance whether a shop is keeping their door closed, or not. This then integrates with the next phase of development, which is the creation of a framework to use the collected data to provide feedback to both shops and consumers. Unlike traditional eco-feedback methods that reflect information about one’s own actions [4], our current research is concerned with how data can be used to inform about the actions of others in order to modify behavior. In this paper we provide a theoretical framework for how this may be accomplished, both in general terms and specifically with examples from the Close the Door campaign.

## Background

Whilst personal norms are standards for an individual’s own behavior, social norms “refer to what *other people* think and do” and reflect what is commonly done or approved/disapproved of within a specific society [6]. The norm-activation model specifically highlights that personal norms frequently stem from pro-social behavior [4], and as a result the use of social norms to influence pro-environmental behavior change has received much attention in the literature. For example, studies have shown that behavior such as recycling and the adoption of reusable shopping bags can be influenced by norms [3, 11], and the positive effect of norms on household energy reduction in particular has received a great deal of attention [e.g. 1, 12, 13]. In self-reported rankings of influence, participants list concern for the environment as having the largest effect on their behavior, and norms the smallest.

However, the reverse was found to be true when put to a practical test [9]. Therefore, social norms are powerful drivers of behavior. Yet norms are not static, and technology such as the Close the Door app can play a pivotal role in changing them by acting as a **tool to increase awareness of the spread of alternative behaviors**. Initially, such behaviors challenge existing norms, serving to call the original behaviors into question. Over time, new behaviors become alternate competing options, one of which may finally become a new, unquestioned norm. We term this process “normification”.

### **Social Normification**

Within the literature of environmental psychology we have identified and categorized three methods for harnessing social norms to bring about behavior change. These range along a spectrum of engagement. The most passive is **social comparison**, which simply compares the actions of one individual with that of others. A classic example of this type is research into home energy use in which only descriptive norms are provided (e.g. whether the household energy use is above or below average for the neighborhood) [12]. However, a “boomerang effect” is often seen in such situations: those with lower than average usage may begin to use more energy and move closer to the average [12].

The next level is one of applying **social pressure** by combining a comparison with a more explicit value judgment (injunctive norm) that can be either positive or negative. This can be as simple as the second stage of Schultz et al.’s study [12] in which a handwritten emoticon (either a smiling or frowning face) was drawn

on the report containing the descriptive norm; this basic social pressure was enough to help negate the boomerang effect. Similarly, a study carried out by Goldstein et al. [5] showed that a message containing both an injunctive norm (the approved/disapproved behavior) and a descriptive norm (how many do so) was found to be the most effective in encouraging hotel guests to reuse towels.

At the most extreme end of the spectrum is **social sanctions** for those who fail to meet the norm. This can be by an authority imposing some punishment, such as a fine or some form of reduced privileges. Alternatively, it can be more “bottom up” through a community boycotting or ostracizing the norm-breaker. For the latter to be effective, there must be some critical mass of agreement in the community around such a norm.

### **HCI and Norm Modification in Third Parties**

HCI typically looks to change norms on an individual level through an improved design [10] or by raising awareness of the consequences of the existing behavior [4]. We believe that using technology to change the behavior of a third party, such as the shops targeted by the Close the Door campaign, will require an ongoing process of norm adoption rather than a one-time intervention. We now describe a three stage process to do this, link this with the spectrum of engagement described in the previous section, and illustrate it with ideas from the Close the Door campaign

The first stage consists of **promoting best practice** and **magnifying awareness** of this best practice. The aim of this stage is to make the current (undesirable)

norm no longer unquestioned and unconscious. This can be done by sharing anecdotes and highlighting individual stories that show the advantages of adopting the new practice and the disadvantages of adhering to the old one.

At this stage, a social comparison approach is likely to be most effective. For example, the data generated by the Close the Door app can be used to estimate how much a given shop loses financially from keeping a door open, and comparing it with a similar shop on the same street that keeps its door closed. A retail chain could receive data for its entire fleet of shops, and a comparison with other similar chains that adopt a doors-closed policy. Such analyses can be made available through a central website, and also through a location-aware service delivering an appropriate report for the shop at a given location. The existence of the app itself also helps call into question the current norm. Users of the app are more likely to notice doors left open, and may bring it up in conversation with shop keepers. Furthermore, the public use of the app is likely to raise awareness among the user's social group, playing the role of a "conversation starter".

The second stage consists of highlighting the **spread of best practice** and its emergence as a challenge to the old norm. At this stage, as a critical mass of those adopting the new behavior emerges, it is possible to begin to use gentle social pressure. This can be done by highlighting and **rewarding those with the new behavior**, rather than explicitly chastising those with the old.

Spread of best practice can be highlighted through the use of maps such as those generated by the Close the

Door app. However, exactly what is displayed needs to be chosen with care. For example, if the majority of shops on a street have their doors open, but a significant minority have them closed, displaying all data would not highlight the new emerging behavior. It may be better simply to display those with closed doors. Over time, as the new behavior becomes more widespread, those with doors open can also be displayed (in red, inducing mild social pressure). Such maps can be displayed through the app and the associated website, but will have more power when displayed on existing large public display screens, with geographical coverage appropriate to that community.

Community electronic message boards and public scrolling text displays can also be used as a medium for spreading the new behavior. Again, care must be taken regarding the message. When there are low numbers of adopters, absolute figures can be used such as "30 traders on your street shut their door in winter", moving on to statements such as "over half of traders" and "most traders", according to uptake. Comparison can also take place between neighborhoods and shopping streets—again, on a map-based display but this time with an icon and rating for each street/neighborhood rather than individual shops.

In both the individual and neighborhood case, positive performance can be linked to public recognition and reward. For example, a high Close the Door score could be required for the shop to receive a local "seal of approval", e.g. [goodbristol.com](http://goodbristol.com), which seeks to "point people at places that [Bristol Green Capital] believe are trying to do the right thing to minimize the damage they are doing to the planet and its resources". There is then the risk of losing this endorsement if app

monitoring shows that the door is left open on a regular basis.

As the new behavior becomes more widespread and encouraged by more in the community, location-based information can be used to encourage community members to support those who adopt it and possibly shun those who do not. The Close the Door app allows users to identify which shops keep doors open or closed, and also allows searching for similar shops locally—for example, a user can find the nearest supermarket that keeps its doors shut. In a small way, this can result in social reward or sanctions based on the emerging new behavior. This approach in particular has enormous potential; of the participants surveyed in the initial CTD study, 92% agreed that businesses have a responsibility to follow environmentally sound policies and 58% report preferring to shop at places that have such policies versus those that do not. However, 73% also signaled that it is difficult to know a shop's stance on the environment. Therefore, making such behavior visible can potentially change shopping patterns and aid in the creation of new norms.

When the existing norm has been challenged and alternative behaviors are emerging, it is also possible to adopt a more aggressive stance involving **campaigning and pressurizing**. This is an approach that the Close the Door campaign already follows, but the use of the app could enhance the current practices. For example, the Close the Door website features a section on specific “energy wasters” and the campaign manages an active Facebook page that invites users to post photographs of shops that leave their doors open during the winter. This can be taken a step further by naming and shaming big companies across the country,

with league tables estimating how much energy each wastes due to an open-door policy. This can potentially impact a company's reputation, especially those who trade on positive environmental credentials. The app could also allow shoppers to act immediately when confronted by chain shops with open doors by providing the option to automatically send an email to a shop's head office, or add their voice to a virtual petition that is sent to the head office when a target threshold is reached.

The third stage is one of **solidifying a new norm**, which can take place only if and when the new behavior has become very widespread. At this stage, the new behavior is expected, and the old behavior is considered questionable. At this stage, social pressure and social sanction (either by community or by institution) can be stronger. It is no longer necessary to highlight those engaged in the new behavior, but rather to highlight those who do not. So, for example, the CTD maps would show only those shops who do not keep their doors closed. Such maps and location-based services have an interesting additional role at such a time, which is to **highlight necessary exceptions to the norm**. For example, a café may not maintain its door closed all the time, but use it to regulate temperature from the kitchen. A location-based app can be used to inform interested customers of this.

## **Discussion**

In discussing reasons for joining the Close the Door campaign, a local organizer stated, “It seemed to be low-hanging fruit. I felt this was a campaign we could win.” However, the goal has remained out of reach and he reports finding the battle against the behavioral

status quo—the norms of leaving a shop’s doors open—to be more difficult than anticipated using traditional methods of persuasion. Unless legislation is passed to require shops to keep their doors closed [8], it is clear that other methods must be found if the Close the Door campaign is to achieve its ultimate aim. The Close the Door app has already shown it has the potential to bolster the campaign by allowing the data collection process to be streamlined, freeing the campaign to focus on advocacy. In turn, by allowing the data to be used as a tool to modify existing practices and by making the norm adoption process visible to all stakeholders, we believe the target can be moved back within reach.

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