

**Discovering the barriers and motivators to pro-environmental behavior
within the Maunalua Bay region, O‘ahu.**

By

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For

MĀLAMA MAUNALUA



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Introduction

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Maunalua Bay is located on the southeast side of Honolulu, encompassing about 6.3 miles from Kupikipiki'ō to Kawaihoa (Black Point to Portlock Point). The near-shore environment is deteriorating due to the urbanization of the nine watersheds that feed into the bay (Atkinson 2007). Local residents and visitors visit the bay region to enjoy activities such as ma kai recreation (ocean; fishing, snorkeling, diving, boating), ma uka recreation (land; hiking, running, sporting games, dog parks etc.), employment, economic activities (shopping, dining) subsistence (supporting oneself & 'ohana through fishing or gathering), volunteer. Although these activities are enjoyed by the community, increased traffic has placed stress upon the natural balance causing detrimental impacts throughout the ma uka to ma kai (mountain to sea) connection. These impacts include: sedimentation, coral bleaching, algal blooms, water pollution, decrease in biodiversity, and well-being of users and the Maunalua Bay region (Wolanski et al. 2009).

In an effort to combat these detrimental impacts, local campaigns such as Cherish, Protect, and Restore Maunalua Bay (CPR) and Plant a Tree Save the Sea are run by non-profit organizations like Mālama Maunalua. These organizations work to encourage communities to take environmental actions such as planting a tree, conserving water, and reducing run-off. Mālama Maunalua wants to know why “on the fence” people aren't participating in environmental/conservation actions. We will be creating a survey to take a heartbeat of the community to understand where their barriers and motivations are.

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Environmental behavior theory is essential in identifying society's responsibilities to the environment. As Turaga et al. (2010) state, “in this era of serious and potentially catastrophic global environmental change, inducing pro-environmental behaviors (PEB) in individuals, is one of the important challenges in the path to sustainability”. This relates to the community of Maunalua Bay in the fact that pro-environmental behaviors need to be implemented for the sustained longevity of the bay, the health of the terrestrial and aquatic environments, but also for the community's benefit.

Community members that exhibited pro-environmental attitudes were more likely to participate in pro-environmental behaviors (Kollmuss and Agyeman 2002). These attitudes align with conservation lifestyles, social environmentalism, land stewardship, and environmental citizenship which can influence members to participate in environmental actions (Larson et al. 2015). However, not all community members implement environmental actions at their household, even if they understand it's importance, because of barriers. Three barrier levels to “on the fence” participation to engaging in PEBs are: Individuality, Responsibility, and Practicality (Kollmuss and Agyeman 2010). From identifying the main barriers and obstacles households are facing, motivators can be identified and enacted. For instance education,

incentives, and pledge drives can motivate residents of the Maunalua Bay region to practice PEB.

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We are trying to discover the barriers and motivators to participation in environmentally friendly actions within households in the Maunalua Bay region. Once these barriers and motivators are known, local organizations can create campaigns centered around household environmental/conservation actions that could ultimately reduce urban-runoff from entering Maunalua Bay. In addition to identifying the barriers and motivators, we are asking demographics to know who our community is and the current status of resident actions within Maunalua Bay region and across O‘ahu. Furthermore, we hope to identify the users of this region, what their primary use of the region is, and where they live.

Intellectual Merit

Our methodology of using online surveys will help us to better understand the barriers and motivators to PEB of residents of the Maunalua Bay region and those that visit the area. Our project will inform how local organizations should gear their campaigns to support their residents in participating in environmental actions, thereby making their interactions with people more efficient. This project is shaped by the Human-Environment Systems Framework (HESF) which aims to understand how people are interacting with the environment. This HESF has been used in the past to better conceptualize actions related to climate change and environmental awareness, which is highly applicable to the topic of behavior change. Furthermore, the results of our surveys will give local organizations better guidance as to how they should influence people’s environmental decision making while in the Maunalua Bay region. Organizations will have more knowledge of why people may not be currently participating in environmentally conscious behaviors.

Research Question and Objectives

We are conducting this project to understand the motivators and barriers to community members implementing environmental and conservation action in their households. We have assessed survey techniques to create an effective measure of environmental behavior in the Maunalua Bay region. Our objectives are to (1) construct a survey to examine who are the users of the Maunalua Bay region and their involvement in environmental behavior, (2) rank various environmental actions by the identified barriers, and (3) recommend solutions that organizations in the area can use to help residents to overcome the barriers.

Approach

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Kollmuss and Agyeman (2010) identified that barriers can be categorized into three levels: Individuality, Responsibility and Practicality. Individual barriers are ones that stem from the individuals attitude and temperament. Responsibility barriers arise when individuals feel that they cannot influence the situation- or should not be responsible for it. Practicality barriers are social and institutional constraints that prevent PEB actions regardless of attitudes. Although we did not explicitly identify for our survey which level the barriers belong to, this knowledge will be important when discussing the difficulty level & motivator of the barriers.

To understand the nature of barriers we read publications by McDonald and Oates (2003), Gadenne et al. (2011), Whitmarsh and O'Neill (2010), Dhakal et al. (2017), and Ricordi et al. (2014). From these publications we identified that psychological, economic, social, and cultural factors and having a lack of space, time and accessibility are barriers to participation in PEB. Not having adequate knowledge about the targeted action and a lack of trust in those dispensing the information can be additional barriers. Ricordi et al. (2014) found that lack of material availability and knowledge of appropriate maintenance practices were barriers to using native plants in landscapes. Dhakal and Chevalier (2017) identified that in addition to cognitive barriers of uncertainty on cost (initial and maintenance), lack of technical capacity and awareness were barriers to implementation of green infrastructure. We used these publications to guide our decisions on which barriers to include in our survey, which are: time, affordability, knowledge, technical skill/ ability, environmental moral stance and decision power.

We also reviewed an article by P. Wesley Schultz (2013) that links barriers and motivators to PEB through examining the tools of behavior change. Schultz uses a community based social marketing framework to identify barriers and link the identified barriers to corresponding benefits of PEB. To match the tools of change to the behavior, Schultz created a matrix with four combinations (figure 1). We decided to focus on three of the four combinations that best represented the “on the fence” community we are examining. Low benefits and low barriers is when the target behavior is relatively easy, there are few barriers, and few perceived benefits. Low benefits and high barriers refers to when the target behavior is relatively difficult, there are few benefits, making this the most challenging combination and often requiring incentives. High benefits and low barriers is when the target behavior is relatively easy and the audience is motivated, but prompts or education are often required.

Schultz identified various topics of motivators from the four combinations in the matrix (figure 1), we mainly focused on the topics from the three combinations we closely examined. These motivators are: social modeling, social norms, incentives, contests, education, feedback, prompts, and cognitive dissonance. Additionally, Steg and Vlek (2009), revealed social support and role models as main motivators from their review and research on encouraging PEB. From evaluating the influence on consumers' environmental beliefs and attitudes on energy saving behaviors, Gadenne et al, (2011) concluded that subsidies and social influence are also motivators.

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The presence of PEB within a community is reflected by participation in various environmental actions. As mentioned above, Larson et al. (2015) highlighted that environmental actions can be grouped together into four different domains: conservation lifestyle, land stewardship, social environmentalism and environmental citizenship. Conservation lifestyle includes actions that many people associate with the environmentalism and sustainability movement such as recycling, conservation of water and energy, waste reduction, car-pooling and purchasing environmentally friendly products. Land stewardship includes actions that are oriented to “improve the ecological features of a particular place” (Larson et al. 2015), such as planting trees and plants to create a wildlife friendly habitat, participation in a wildlife study, and volunteering with conservation efforts within their community. Land stewardship is an important domain because it depends on and benefits from the community having a connection with a particular space. Social environmentalism arises when members work to build a network within their community that participates in PEB actions. They reach out to their neighbors by volunteering with a local environmental group, actively working to address a larger environmental problem, and talking with others about said problems. Environmental citizenship takes the networking of social environmentalism and puts it upon a political stage. Actions that fall within this domain are voting to support policy that affects the local environment, signing petitions, donating money, and writing letters to media outlets and politicians in response to an environmental issue.

For our survey, we focused on the conservation lifestyle and land stewardship domains because they encompass the actions that were identified by the University of Hawai‘i Sea Grant College Program in the *G'O i'o c'KP "' k'p'c'M'w w'Y ck'Q'O c'w'p'c'm'e <'C'Y c'v'g't'uj' g'f 'J c'p'f' d'q'q'n'i'l'q't 'i'j' g' T'g'u'l'f' g'p'u'i' q'l'i' O'c'w'p'c'm'e* (Wanger, 2011) to be pertinent to keeping the bay healthy. The guidelines identified six separate practices, but we grouped them into four categories: reducing run-off, proper chemical disposal and use, water conservation and use, and planting trees and plants. These conservation lifestyle actions are important because of their ability to become a true driving force behind restoration if the majority of the Maunalua Bay community were to implement these easy “everyday actions”. Thus, it is imperative that we find which of these “everyday actions” the community members are already implementing and which ones they are not. Hawai‘i is blessed to have a culture that is rooted in the mindset of mālama ‘āina (to care for the land), which reflects the actions that are within the land stewardship domain. This domain is important as many members use the bay to gather and fish for subsistence.”

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A survey will uncover peoples’ knowledge and involvement in environmentally conscious and sustainable efforts within the Maunalua Bay region and will allow organizations to use the environmental behavior theory through a community based social model to break down any barriers between these efforts and bay users. We decided to choose an online platform

for our survey due to the circumstances of COVID-19 and for efficiency. There are a wide array of online survey softwares, so we created trial surveys on Survey Monkey, Survey Planet, Google Forms, and SurveyGizmo. We decided on Google Forms due to the easy user interface, the question formatting options, and it is free of charge, making it more accessible to non-profit organizations.

Dillman et al. (2014) published numerous guidelines for factors to consider from available software programs. Design flexibility is important, and was a key player in our decision to use Google Forms. Google Forms provides a template for questions, it has the capability of mobile optimization and allows for full control over the data, with the option to export to a Google Sheet. It is also important to pick a program that considers the security of data (Dillman et al., 2014). Google Forms secures the data and has the option for responses to be reported as anonymous.

After choosing Google Forms, we had to decide how the survey will be programmed and hosted, which was another important guideline from Dillman et al. 2014. Google Forms is very user friendly, and therefore has the potential to be hosted by local non-profit organizations and they will not need to pay someone to host it. Since this survey software is so user friendly and with the prominence of technology in today's world, the survey population should not face issues with technological capabilities, which is also an important requirement of online surveys. Google Forms allows us to take steps to ensure that questions display similarly across different devices and platforms, and decide how many questions will be shown on each web page, as well as how the questions will be arranged (Dillman et al. 2014). This also facilitated the bifurcation of questions, making it easier for the survey population to follow the questions in a logical order.

Based on our extensive literature review, we worked to simplify our survey to ensure that individuals would have the time and willingness to participate. Several websites and survey guides encouraged that surveys take no longer than 15 minutes to complete. Our completed survey takes anywhere from 5-10 minutes to complete based on participants' level of thought (Qualtrics 2020). Some other qualities we had to consider is to have a funnel approach to our survey, meaning that topics are broached in a logical order and become more specific and focused as the survey continues. This style is designed to help participants logically think about the content. We followed the recommendation from Dillman et al. 2014 to insert the survey link into an email, for easy access to the survey. We introduced the survey, the need for the data, and how long it would take, in order to brief the survey population. This email was sent to our pilot test survey population, which was our NREM 601 colleagues for sample responses and feedback.

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The first step in designing questions for a survey is to clearly define the research questions (the goals of the study) (Dillman et al. 2014; Pew Research Center). Although this is a straight-forward step, it took time to converse with our partner, Mālama Maunalua, to ensure the

research question was clear and essential to their needs. After a few iterations and meetings for clarification, we were able to come to agreement that the goal of the study was to (1) identify PEB non-participation and (2) identify barriers, meaning that we aim to find why some community members are “on-the-fence” for PEB. After deciding our goals, we deliberated if we should format the questions to be open-ended or closed-ended. Although open-ended questions would collect in depth, detailed information, we chose to use closed-ended questions because our distribution method was email. Closed-ended questions fall into two categories, nominal and ordinal. Nominal questions are used to compare “a set of categories with no natural underlying order” and ordinal questions “provide an ordered set of answer categories, and respondents must decide where they fit along the continuum” (Dillman et al. 2014).

While creating the questions we referred to guidelines created by Dillman et al. (2014), Program on Survey Research, and Pew Research Center. These guidelines stressed that any complex, scientific, or confusing words were to be explained and given full definitions to ensure clarity. In addition, jargon should be avoided and simplified language used throughout the survey. The questions were vetted multiple times to catch any double negatives and emotional language that could influence the participant’s opinion. Once the questions were written, they were organized logically to create a flow to ease the respondent into the survey with easy to answer questions up front and possible abrasive inquiries, such as income, at the end. Additionally, we implemented bifurcation (branching) to ensure that respondents were only answering questions that applied to them (Dillman et al., 2014)

Demographic questions were asked to help us recognize patterns within the community that could affect how different groups, based upon demographic characteristics, will respond to the questions (Bethlehem, 2010; Diment and Garrett-Jones, 2007; Kollmuss and Agyeman, 2010). The demographics we were interested in are age, education level, income, residence location (zip code) and whether the respondent is an owner or renter.

We used a frequency scale to investigate how often participants’ visited Maunalua Bay and the reason for their visit (Larson et al., 2015). Our topics were grouped into recreation activities (ma uka and ma kai), employment, commercial (e.g. shopping, dining, movies), and subsistence. The scale we used was: At least once a year, twice a year, monthly, weekly, daily, and n/a. We used a rating scale to investigate willingness for participation and importance of bay health. The rating scale was bipolar, the graduation was along two opposite dimensions, and had five available response options (Dillman et al., 2014). Check-all-that-apply format was used to understand the number of barriers that respondents identified to be inhibiting them from participating in PEB and the motivators that may entice them to participate (Dillmant et al., 2014). Additionally, the image of Maunalua Bay was used to clarify the boundaries that were stated in the question as suggested by Qualtrics Survey Design.

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Before we piloted the survey, we followed the guideline to obtain our IRB approval. Our consent form was created using a template provided by the University of Hawai'i at Mānoa's IRB and embedded into the survey once approved. This process was very informational as the training modules identified the possible risks of research that involves human subjects. We took every precaution to ensure that the participants of our study would have minimal to no harm, but had the option to opt out at any time if they did become uncomfortable.

Results

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After completing the survey design it was dispersed to graduate students in the Natural Resources and Environmental Management department at the University of Hawai'i at Mānoa for a pilot test and feedback. Following the several rounds of revisions and fine tuning this preliminary test has offered us valuable information to finalize the survey to ensure that it provides helpful information. The pilot survey offered an opportunity to evaluate how a sample population will respond to the questionnaire. Additionally, our classmates are able to offer valuable critique on wording, content, organization, and clarity. We tried two different techniques in sending out the survey to our pilot audience: one email directly including the survey, and one follow up email in which we included the survey as a link. The second email seemed to prompt more responses, or it could have been the reminder.

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At this time we have received nine responses to our pilot survey. Out of these responses 100% consented. This is valuable information in that respondents are reading the consent form and understanding what they are consenting to when selecting the requisite boxes. Additionally, only 11.1% of our respondents reside in the Maunaloa Bay area. At this time, the survey has been piloted purely for trial and feedback purposes so it is not a requirement that survey participants are from the region. One hundred percent of our respondents are renters of their property (Figure 2). 66.7% of our respondents rent a house while 33.3% rent a condo (Figure 3). Those that rent a house may have more ability to begin environmental actions, while those in condominiums may not be able to do so because of a lack of outdoor space. The Maunaloa Bay region is used most frequently for ma uka and ma kai recreation and second most frequently for consumerism (Figure 4).

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Our primary goal of the survey was to assess which environmental actions respondents participate in, and of those that do not, what would motivate respondents to overcome the barriers to participation. The environmental action inquired about was if respondents have planted trees on their property within the past three years (Figure 5). 55.6% responded yes, while

44.4% have not planted trees within the past three years. Respondents are unable and have not participated in this action primarily because they are the renter of their property and do not have the authority to plant trees. Respondents would be more inclined to plant trees if they had training, more information, incentives, and coupons.

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88.9% of respondents have not taken actions to reduce storm and urban runoff by implementing adjustments such as turning downspouts to direct water to the yard, installing rain barrels, and creating a rain garden on their property (Figure 6). The primary barrier to participation is that our respondents are renters and cannot alter their property drastically. Respondents indicated they would be more motivated to participate if they had technical training and information.

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88.9% of the sample survey population do work to conserve their water use (Figure 7). The one respondent who does not work to conserve water use indicated that more information would be helpful.

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100% of our respondents follow the directions when disposing of chemicals (e.g. paint, clorox, cleaning supplies, etc.) (Figure 8).

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As of now, 100% of the survey respondents do not reduce impervious surfaces on their property (Figure 9). The primary barrier is that respondents are not the property owner and thus can't drastically alter their residence. Other barriers include, a lack of time and a lack of money. Those that do not participate in decreasing their impervious surfaces noted that more information and technical training would influence their participation.

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88.9% of our respondents do limit their pesticide (e.g. Raid, Ortho, Spectracide) and herbicide use on their property. Those that do not limit their use indicated that they are not the property owner and thus don't control this aspect of their residence.

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Pools can create large amounts of discharge and runoff, and if not disposed of properly could have detrimental impacts further downstream and in the ocean. Of those respondents that have a pool on their property, all hire a pool service to clean and dispose of the pool waste.

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Our survey ended with inquiring more about which actions and campaigns people would like to participate in. We used a 5-point rating scale (not interested - very interested) to ask respondents how interested they were in participating with: (1) a tree planting campaign, (2) a storm and urban runoff campaign, and (3) a coral reef. All respondents selected values of 3 or higher. Respondents were asked how important it is to restore the health of Maunalua Bay using a 5-point rating scale (not important to very important), eight of our nine respondents indicated that it was very important to restore the health of Maunalua Bay.

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We also wanted to know how people are receiving news and information because this would inform how organizations distribute their campaigns and goals. (Figure 10). We found that most people receive their information from Facebook and through word of mouth. Next, people also receive information from Instagram, the local news, and the radio.

Discussion

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The preliminary results from our pilot test indicated that the “power of decision making” barrier is difficult to overcome for PEBs with benefits of any level. This barrier is a result of property ownership status (i.e. renter or owner), and the type of residence (i.e. condo or home). We suggest that organizations create different motivational messaging targeting different demographic groups based upon property ownership. This way community members can receive information tailored to how they can overcome the responsibility barriers and still take action within their capacity.

We found that responsibility barriers add difficulty to PEBs that are inherently labor and time intensive, such as converting the impervious surfaces of a property (e.g. driveways, concrete patios, and walkways) to a porous material. Following Schultz’s (2013) motivator and barrier matrix (Figure 1) organizations should compile resources (e.g. licensed contractors, materials, various how-to instructions, zoning restrictions, cost) into a pamphlet and offer a rebate to encourage homeowners to convert materials (Figure 8). For renters, messaging should target actions that reduce run off by conserving water use. Both suggestions should be combined with a commitment drive where homeowners are asked to pledge to reduce impervious surfaces and renters pledge to water their plants after sunset. For the commitment drive to be successful, organizations will have to post the pledges on a public platform and encourage accountability by asking for a photo, hashtag inclusion and tagging the organization. Additionally, we suggest using social modeling methodology (Table 1) to create camaraderie within ahupua‘a’s; for many residents in Hawai‘i exhibit a strong tendency to participate in environmental actions within the land stewardship domain.

The preliminary results also displayed how this sample population receives news about what is going on in their local community. Since Facebook and word of mouth were the most prominent news outlets (Figure 10), we recommend that organizations distribute their information primarily on Facebook and to their family and friends. Instagram also appears to be a popular platform. Posting both on Facebook and Instagram is simple since you can link posts to one another to ensure you are reaching both platform users. If possible, organizations could get a segment on the local news or radio stations. The benefits would be that they would not only reach residents of the Maunaloa Bay region, but also the entire island to reach users of the Bay that do not reside in the Maunaloa region. This could help in increasing participation of campaigns.

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After running our pilot survey to our sample population, we were able to gain some feedback that we then incorporated to revise our survey. Some of this feedback were simple fixes such as taking out “untitled section” as a title or a small grammar error. We were also informed that the sub-title, “Exploring pro-environmental behaviors on O‘ahu” could create bias, however PEB is a known theory, and was used in creating most of these questions and responses. There was also a suggestion for putting the multiple choice answer options in the same order for each question, however we had set “shuffle answer options” in Google Forms to decrease bias and ensure the survey population is reading each answer option. These comments are factors to consider in revising our survey to better suit the survey population, while also following the literature and research behind survey and questions techniques. We would like to note that because this was a pilot test of the survey, results could differ in the future as it is likely that respondents will be living in the Maunaloa Bay region. For instance, when asking what activities respondents use the Maunaloa Bay region for (Figure 4), the respondents will all be community members of the region, and therefore the results of this question will be more accurate. Since the sample population was small, it was not centric to only respondents living in the Maunaloa Bay region. If the organization would like to ensure that the survey is only being completed by residents of a designated region, then another bifurcation needs to be inserted after the question in which respondents are asked if they live in Maunaloa Bay. Additionally, since the sample population consisted of students from the Natural Resources and Environmental Management department at the University of Hawai‘i at Mānoa, results may be biased towards more pro-environmental behaviors.

We did find a discrepancy in the formulation of questions regarding the rating scales to evaluate the respondents level of importance and interest in a topic. We did not label all the categories which could lead to misinterpretation of the middle value- whether it was representing null or a mid-value (Dillman et. al., 2014). Thus we are unable to interpret the results for the three campaigns: tree planting (Figure 11), reducing storm and urban runoff (Figure 12), and restoring Maunaloa Bay’s coral reef (Figure 13).

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Our survey focused on identifying the participation in different environmental actions and the perceived barriers to participation. Although we had inquired to those that identified as not participating what motivators would encourage them to participate, we missed out on asking those already participating what would motivate them to continue in the action and transitioning to the social environmentalism and environmental citizenship domains. Motivators could be asked in a separate survey, or the survey that was created could be upgraded to bifurcate further to ask the motivation questions regardless if the participant indicated yes or no to participation.

Once the motivators of current participants are found it should be compared to the motivators indicated by those not participating. "More information" and "technical training" were indicated as the top motivators for all six of the barriers. This should assist in narrowing down which motivator is most effective in the community. We suggest that organizations revisit the methods that they are using to distribute information and evaluate the efficacy of the current campaigns in the Maunalua Bay region. The messaging must answer the following questions: are they reaching the right people? Is the message of the campaign being heard? Do they trust the source?

We hope that our survey can measure the frequency of environmental actions in the Maunalua Bay region, and guide local organizations to not only evaluate how effective current campaigns are, but also lead to creating new campaigns. These new campaigns should be centric to the environmental actions with high barriers, in hopes to try to lower the barriers and motivate the community to participate. With this survey data and following with an upgraded survey focused on motivators, local organizations will become more aware of their communities' actions, as well as the encouragement that is necessary for these environmental/conservation actions to occur in local households.

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Due to COVID-19 we implemented an online survey format. However, for future research other survey methods could be enacted to verify results and/or to gather additional information. Researchers could administer this survey through in-person sampling (our original plan), phone interviews, or mail surveys. It would be valuable to conduct the same survey across multiple platforms and to observe if results differ because of the methodology.

Benefit to Society

Deploying online surveys and analyzing the results will provide insight to the barriers and motivations to involvement in conservation activities and initiatives through Maunalua Bay. Exposure of these barriers will assist local organizations in implementing the infrastructure & education that will support residents to overcome these barriers. They can use their social

marketing skills as a foundation to build upon with these results, and can adjust their tactics to cater to on-the-fence participants. Social marketing tactics should be reaching all residents and visitors of Maunalua to communicate the importance of bay and watershed conservation, as well as overall environmental sustainability initiatives. It is important for residents to possess PEB for the well-being of the bay they use and the watersheds they live in.

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	<ul style="list-style-type: none"> ● Place in close proximity to behavior ● Works for repetitive behaviors that occur with frequency: <ul style="list-style-type: none"> ○ Energy conservation, litter & recycling. <p>Foot- in-the-door (for cognitive dissonance):</p> <ul style="list-style-type: none"> ● Target small behaviors first, pointing out that the small behavior reflects their favorable attitude toward the issue, and concluding with an opportunity for a larger behavior.
High Benefits and High Barriers	<p>Make It Easy:</p> <ul style="list-style-type: none"> ○ Context matters ○ More education is not the answer- they <i>npqy</i> the benefits <p>Commitment:</p> <ul style="list-style-type: none"> ○ Written or verbal indication of their willingness to engage in a behavior <ul style="list-style-type: none"> ■ Pledging card ○ More effect when made public & durable (posted for a long time)

"

Hli wt gik'

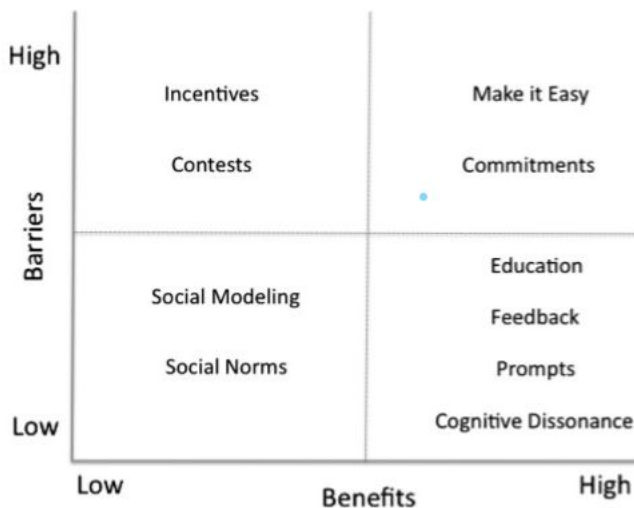


Figure 1. Matching tools of change to the behavior through barriers and benefits (Schultz, 2013).

6) Are you the property owner or renter at your current residence?

9 responses

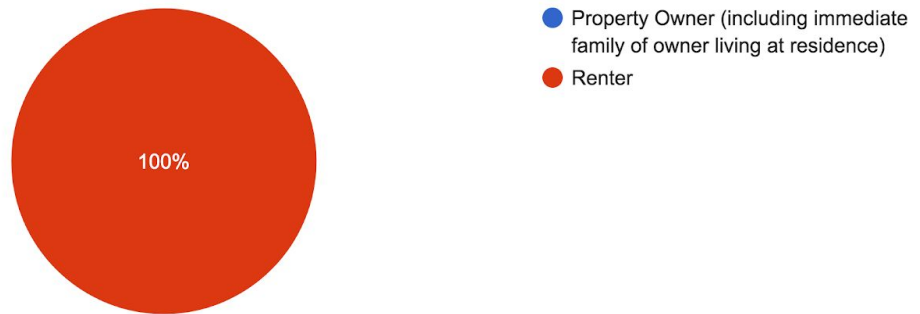


Figure 2. Survey response analysis displaying if the survey population are property owners or renters.

7b) Please indicate if you rent a condo or house.

9 responses

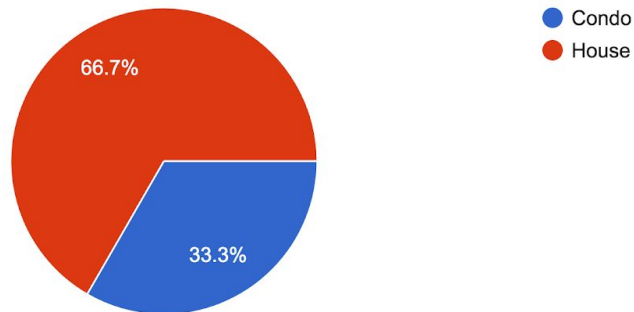


Figure 3. Survey response analysis showing the percentage of if the renters rent a condo or house.

8) We would like to know more about what you do when you are in the Maunaloa Bay region & how often you do it. Please check all that apply.

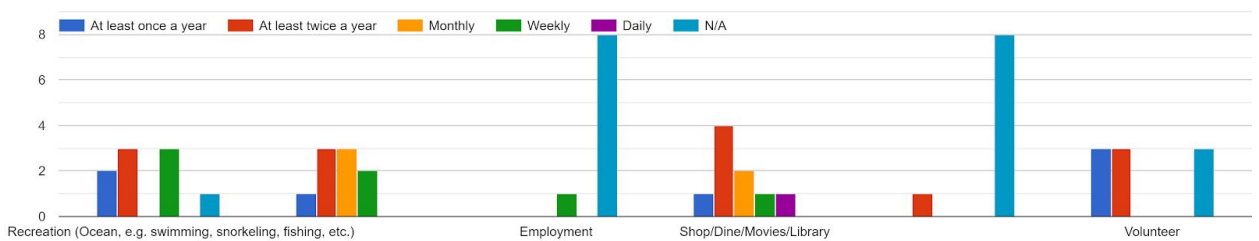


Figure 4. Percentage of what/how and frequency of the survey population using Maunalua Bay region.

9) Have you planted trees or plants on your property within the past three years?

9 responses

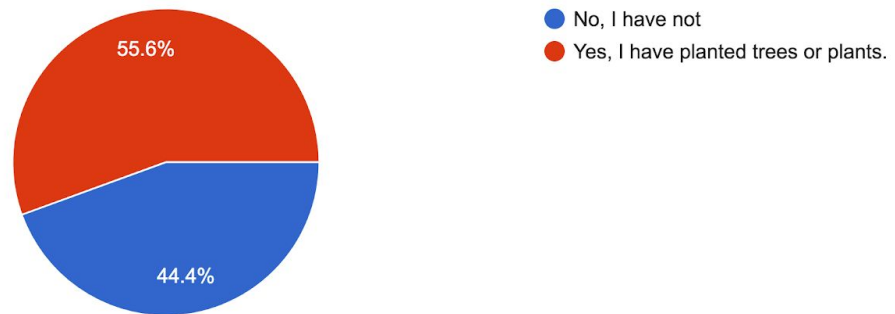


Figure 5. Survey response analysis displaying the percentage of the survey population that have or have not planted trees on their property within the last three years.

10) Have you made adjustments* to your property to reduce storm and urban runoff?

9 responses

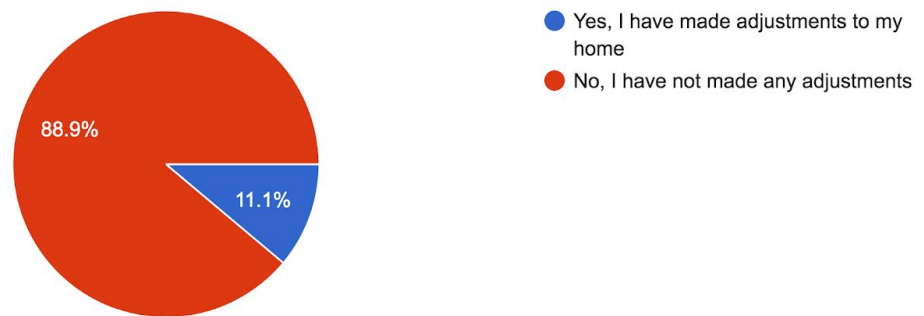


Figure 6. Survey response analysis displaying the percentage of the survey population that have and have not altered their property to reduce storm and urban runoff.

11) Do you conserve water on your property by taking actions such as: watering early in the morning, only when needed, or for a limited time?

9 responses

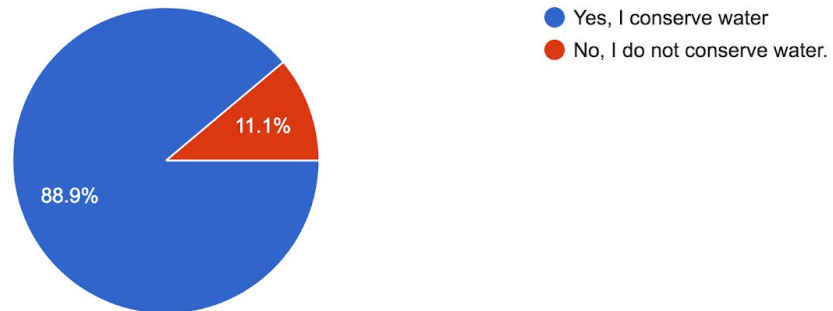


Figure 7. Survey response analysis showing the percentage of the survey population that do and do not conserve water.

12) Do you follow the instructions for use and disposal of household chemicals (e.g. paint, cleaning products, detergents, bleach)? Check yes if you have done at least one of the listed actions.

9 responses

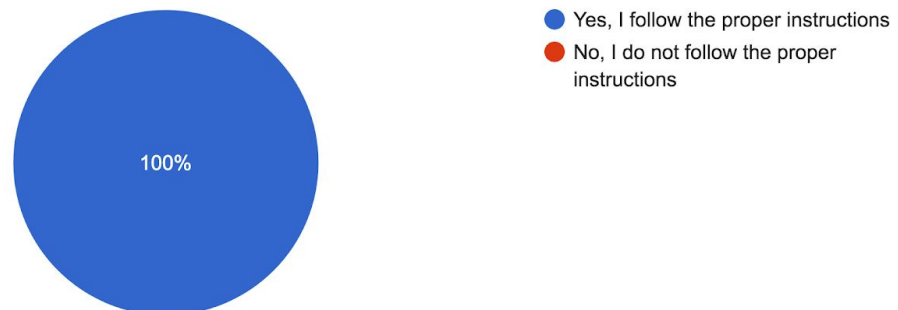


Figure 8. Survey response analysis displaying the percentage of the survey population that do follow the instructions for use and disposal of household chemicals.

13) Have you decreased your impervious (hard) surfaces by installing pavers, converting paved areas into a yard, & or converting driveway by ...f you have done at least one of the listed actions.
9 responses

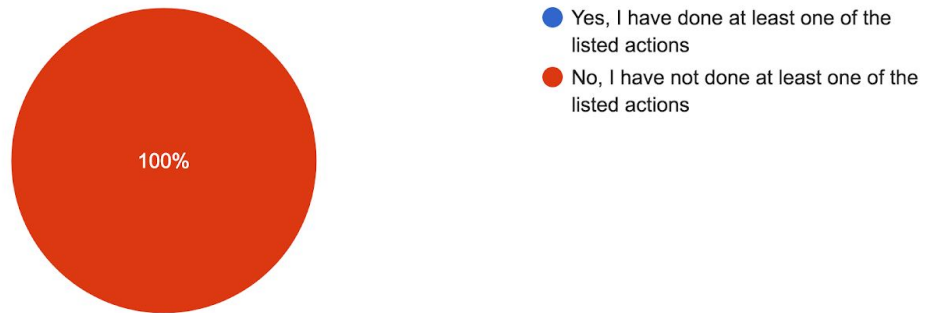


Figure 9. Survey response analysis displaying the percentage of the survey population that has not decreased their impervious surfaces on their property.

20) Where do you receive your news about what is going on in your local community? Check all that apply.
9 responses

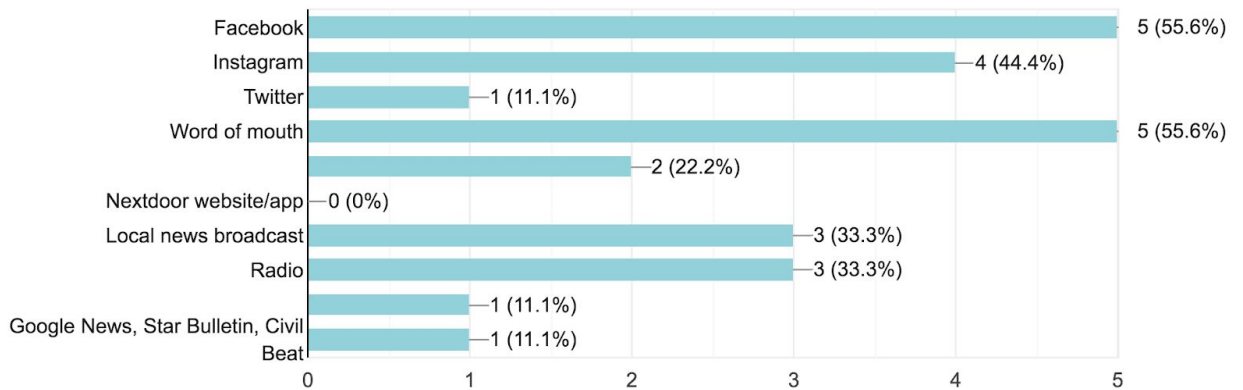


Figure 10. Survey response analysis displaying the percentage of the survey population who receive their news from: Facebook, Instagram, Twitter, Word of mouth, Flyers posted around town, Nextdoor, Local news, Radio, Google News, and “other”.

16) How interested would you be in joining a campaign to plant trees in Maunalua Bay region? (1 being not interested and 5 being very interested)

9 responses

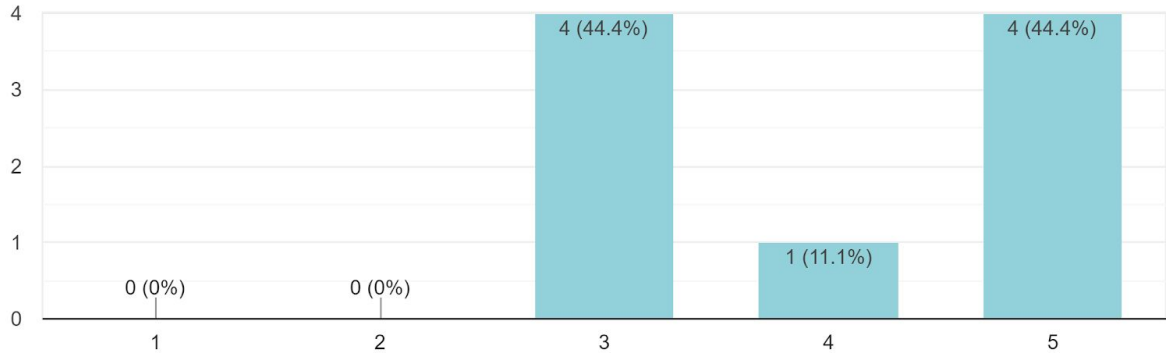


Figure 11. Survey response analysis displaying the interest level of the survey population to participate in a campaign to plant trees in Maunalua Bay.

17) How interested would you be in joining a campaign targeted to reduce storm and urban runoff into Maunalua Bay? (1 being not interested and 5 being very interested)

9 responses

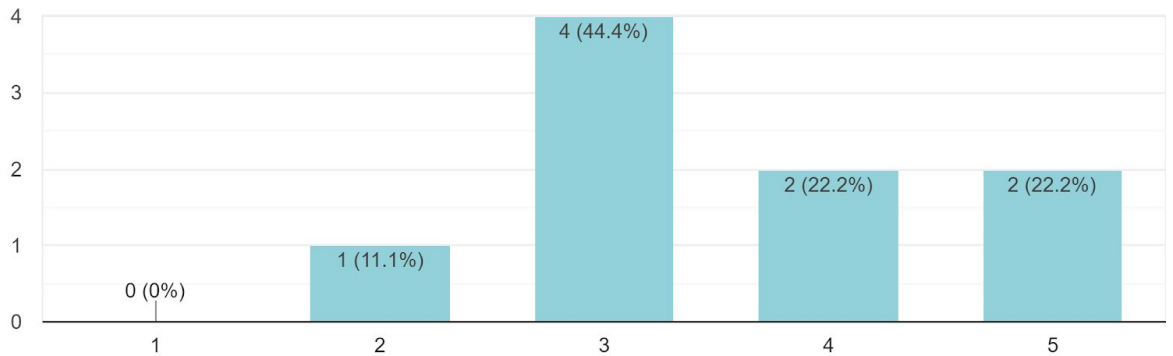


Figure 12. Survey response analysis displaying the interest level of the survey population to participate in a campaign to reduce storm and urban runoff in Maunalua Bay.

18) How interested would you be in joining a campaign to restore Maunalua Bay's coral reef? (1 being not interested and 5 being very interested)

9 responses

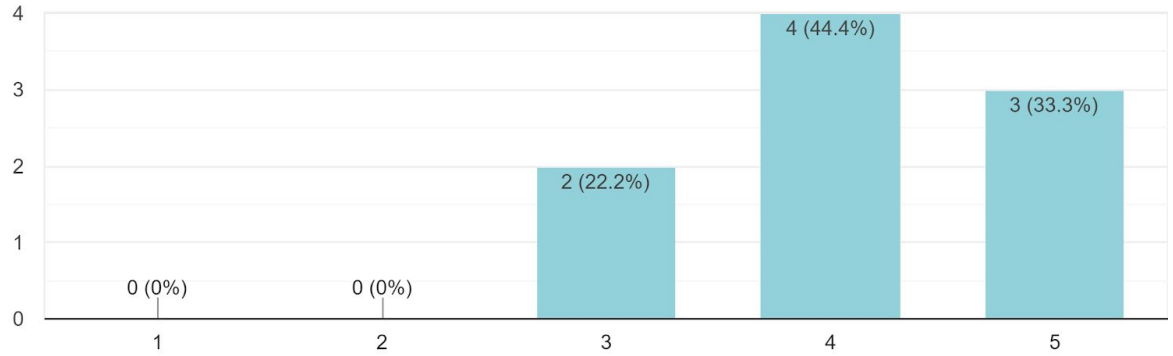


Figure 13. Survey response analysis displaying the interest level of the survey population to participate in a campaign to restore Maunalua Bay's coral reef.