Launching a Wave of Citizen Science Surfers with Smartfin

CAPSTONE

Vanessa Scott | MAS MBC | 6/10/2019

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Abstract

Coastal zones provide significant social and economic benefits to society and are home to the majority of the global population. While highly desirable, these areas are also some of the most affected by climate change and population growth. As climate change continues to progress and severe weather events become increasingly unpredictable, it is crucial to expand the collection of real time data that can improve forecasting, contribute to scientific research and provide information to assist with mitigation and planning efforts in coastal regions. Smartfin, a surfboard fin with a sensor that records sea surface temperature (SST) and GPS data, is a cost effective tool that enables surfers to contribute important oceanographic information to fill the data gaps and support scientific research while doing the activity they love. The purpose of this Capstone project is to find out what groups within the surf community would surf for science, what would motivate them to take part in citizen science and how much would they be willing to pay to participate. To answer these questions, a survey was designed exploring the habits, preferences, environmental views and use of technology among surfers. Using Qualtrics software, the survey was distributed to the surf community through social media. The results confirm the hypothesis that there are groups within surf community motivated to participate in citizen science and pay for a Smartfin.

Introduction

The Data Gap

In situ oceanographic data has traditionally been collected with buoys and sensors in fixed locations and during research cruises. These methods while effective are very costly and provide limited data due to high capital and labor costs as well as physical challenges in the coastal zone including turbulent wave action, currents and biofouling (Brewin et al, 2015). An ocean research vessel alone with all of the modern technology costs upwards of $30,000/day before taking into account the cost of the engineers, scientists and research costs. New technological advancements in autonomous sampling platforms including underwater gliders, drifters and drones have limitations in range and are still too expensive to scale which is why there is a need for efforts by citizen scientists to fill the information gaps (Lauro et al, 2014).

Surfers as a Platform to Fill the Data Gap

Surfers are important stakeholders in the coastal surf zone areas with global estimates of the population at 35 million surfers and growing at a rate of 11.5% annually (Statistic Brain, 2018). The socioeconomic profile of the average surfer in the U.S. according to a Surf-First survey is 34 years of age, well-educated with 62% having college degrees, average income of $75,000 and 67% employed full time (Wagner et al, 2011). With the population size and growth, the opportunity for empowering this community to become citizen scientists is great and the amount of data they could generate for research, planning and mitigation efforts significant on a global scale.

Brewin and colleagues (2015) conducted a study testing the feasibility of using surfers to collect oceanographic information in the coastal zone. By outfitting surfers in the United Kingdom with Global Positioning System (GPS) trackers and sensors testing sea surface temperature (SST), they found that surfers in fact are a great platform for collecting information in the coastal surf zone and not only can they do it cost effectively and produce high quality data but also a very significant amount. Based on calculations including the size of the UK surf population and frequency of time in the water, they estimated the opportunity for the collection of 40 million data points per year. Furthermore, they found that performance information from the GPS tracking device could be of interest to surfers and support continued participation. They did recognize the limitation that the data could contain bias toward the conditions and locations where surfers spend the majority of their time (Brewin et al, 2015).

Motivation to Participate in Citizen Science

Understanding the motivations for citizen science participation are important to the ultimate success of a project. These should be considered in the design and management of a project from the start especially since engagement tends to decrease after initial activity and a large proportion experience a high dropout rate (Nov et al, 2011). In 2015, West et al. studied the motives of citizen science participants and found that the prevalent motivations are wanting to help nature followed by desire to contribute to science (West et al. 2015). In 2016, Geoghegan et al. compiled a final report on understanding motivations for citizen science which included a review of existing literature, online survey of citizen science participants and interviews with stakeholders. The authors found that the literature consistently categorizes participation motivators into the following: altruism to benefit others, egoism for personal growth, collectivism to benefit a group of people and individualism to uphold individual principles. The results from their survey confirmed the findings of West et al. that the top motivators of citizen scientists are altruistic such as helping wildlife, contributing to science and doing something of value and then personal motivations such as learning something new, personal development and future career advancement. With technology mediated projects, the general consensus is that gamification and competition can lead to long term participation (Geoghegan et al, 2016).

Understanding Motivation to Surf with Smartfin

Currently there are no citizen science projects engaging surfers. Smartfin provides a tool to empower surfers to become citizen scientists and fill the data gaps along the coastlines. Since the success of the project depends upon the long term participation of a significant group of surfers, it is important to understand what would motivate the surf community to surf for science. While there are many studies exploring motivations of citizen science participants in existing projects, this Capstone is uniquely designed to understand the motivations for surfer engagement. The results of the online survey deployed to surfers supports the hypothesis that surfers would pay to participate in a citizen science project with Smartfin and clearly defines participation motivations.

Methodology

The survey questionnaire was designed to explore the habits, preferences, environmental perspectives and use of technology by the surf community (see Appendix for complete questionnaire). Using a quantitative method through the online survey platform Qualtrics, the survey targeted surfers with an anonymous link posted on the social media pages (Facebook, Instagram and Twitter) of Smartfin, Scripps Institution of Oceanography, Sustainable Surf, Captain Liz Clark, Surfrider San Diego Climate Change Group, Surfers for Science, Surf San Diego and The Sustainable Spot, which was then shared by individuals across social media platforms. In the survey, participants were given a brief introduction, consent form and 2:30 minute video giving background on the Smartfin project with a total of 31 questions. The survey was distributed and live from April 18, 2019 to May 8, 2019 during which there were 207 responses, 147 of which were completed and usable. Descriptive analysis was done on survey responses through Qualtrics and Excel and a cluster analysis performed with R and Radiant software to determine relationships and groups in the data and describe potential Smartfin user personas.

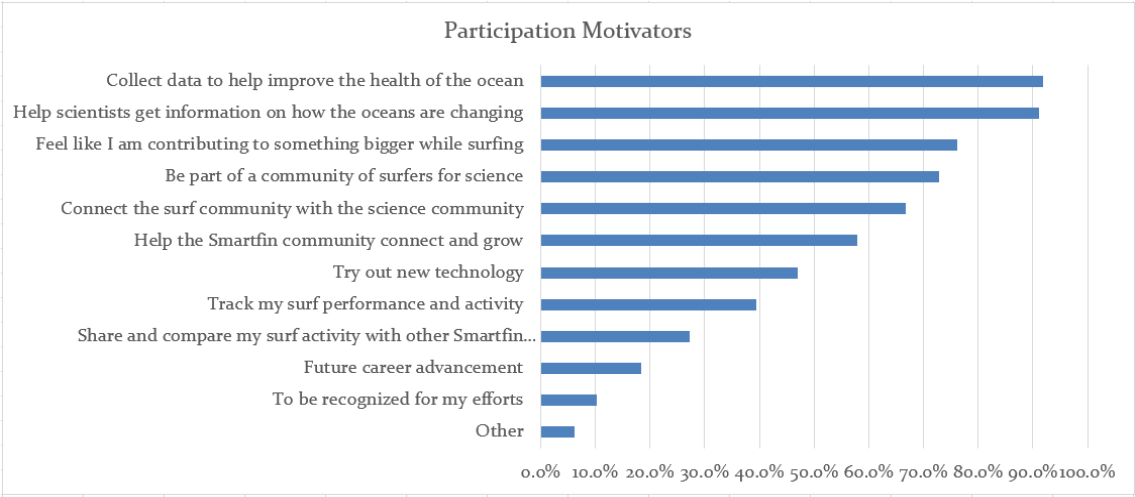
Results

Study population

The distribution of survey respondent profiles range from 18-64 years of age with 67.3% male and 32.7% female, average annual income from less than $25,000 to over $151,000 and education levels from high school graduates through professional degrees. Surf experience include those with less than one year to over 10 years and surf frequency from a few times a year with the majority surfing multiple times a week. A few respondents do not surf but stand up paddleboard. The majority of respondents surf in the Southern California area and use longboards and shortboards followed by funboards and stand up paddleboards. The majority of participants are familiar with the terms citizen science and crowdsourcing, concerned with the health of the ocean and environment and have volunteered for activities including beach cleanup and environmental education.

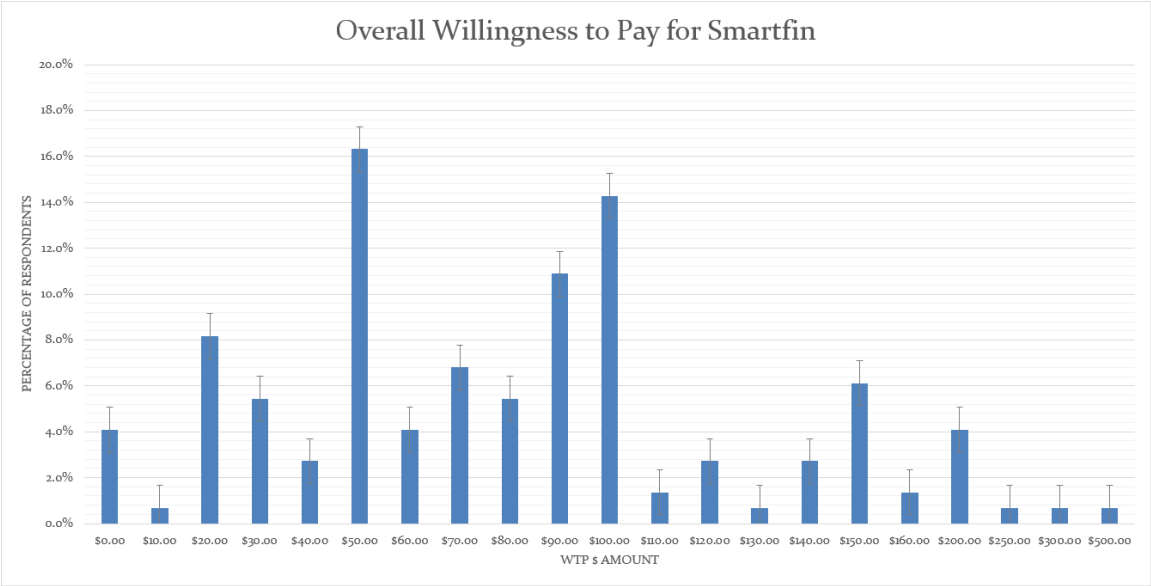
For a full report on survey responses, please refer to the Appendix.

Participation Motivators



Motivators to participate in the Smartfin project chosen by survey respondents can be broken down into three categories based on overall response count. Respondents could choose all that apply and were not asked to rank motivators in order of importance. Clearly leading the list of motivators are the collection of data to help improve the health of the ocean and helping scientists get information on how the oceans are changing, both focused on the citizen science attributes of the activity. The highest motivators are altruistic, science-based, intrinsic and focused on community. The next group of drivers include technology and performance aspects with personal development ranking lowest in importance. This is in alignment with the findings of the study done by West et al. and Geoghegan et al. (West et al., 2015, Geoghegan et al., 2016). Other motivators submitted by respondents include getting baseline of current ocean water conditions, participate in citizen science, "learn that Smartfin is as quality as regular fins" and a "desire to make it more accessible to lower-income individuals."

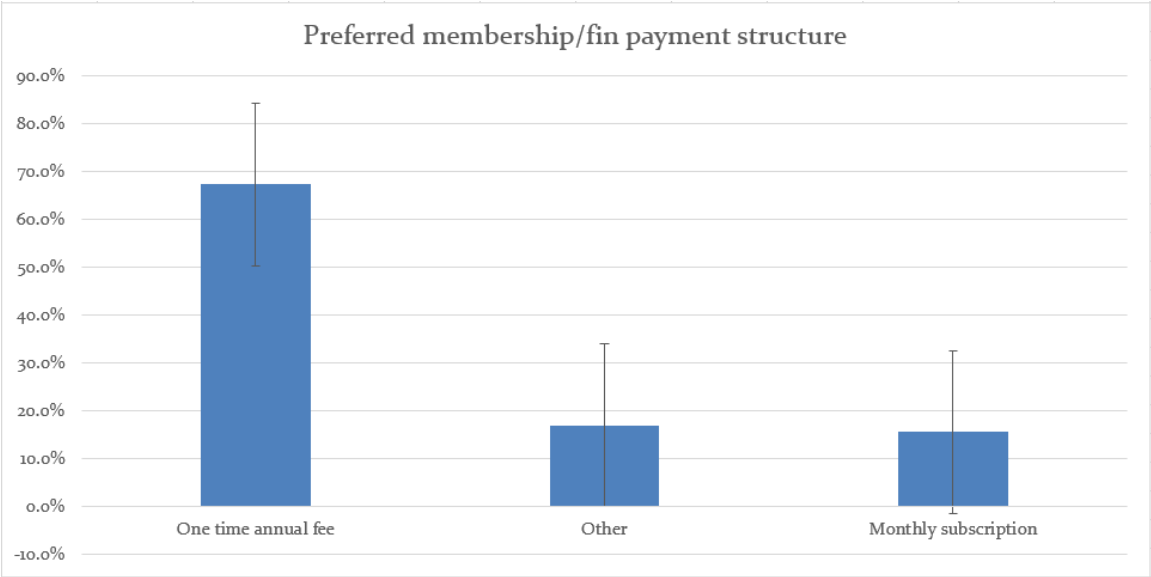
Willingness to Pay for a Smartfin



For overall willingness to pay, 94% of respondents said they would pay to participate in the Smartfin project. Respondents were able to drag a slider within a range including $0 to $500 and choose an exact dollar amount. The average dollar amount respondents said they would pay for the fin and membership is $86.90 with the median price at $80. The confidence interval of average was $76.70 to $97.00 with a standard deviation of $62.10. The minimum chosen is $0 and maximum $500. 58% of respondents fell into the range of $50-$100 with the most common choice $50 at $16.3%, $100 at 14.3% and $90 at 10.9%.

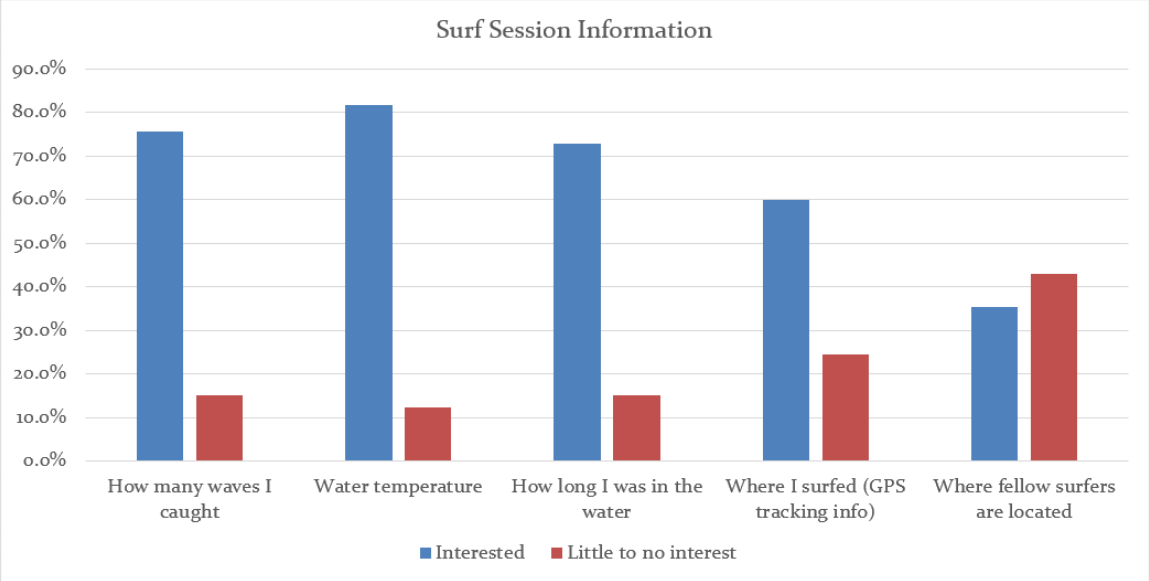
As expected, willingness to pay correlated with annual income with statistical significance trending from highest average willingness to pay with highest income amount.

Preferred payment structure for Smartfin



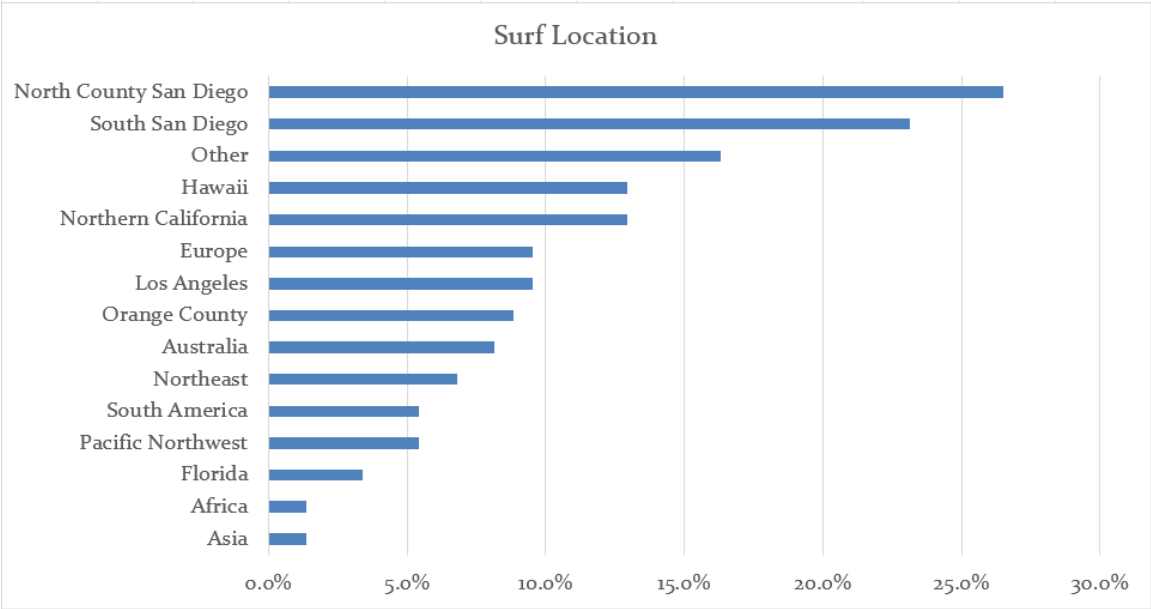
The majority of respondents (67.3%) said they would prefer to pay a one-time annual fee for the Smartfin and membership. 15.6% said they prefer to pay a monthly subscription and 17% chose other. Responses given under other include one-time fee upfront from 6 respondents, would not pay for fin from 7 respondents and pay per use from one respondent. This information can be helpful designing the cost structure for Smartfin.

Surf Session Information



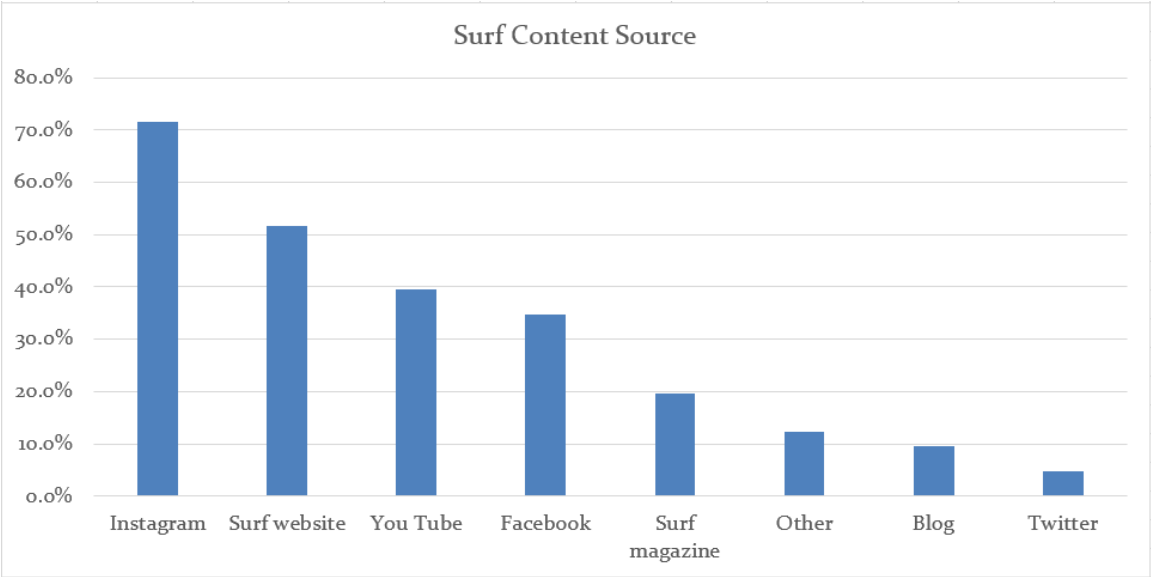
When asked what pieces of information the sensors within the Smartfin can provide users are of interest, water temperature received the highest interest from respondents followed by number of waves caught and duration of session. This confirms the value that respondents place on the scientific data collected by the fin over performance information. Less interesting to survey respondents was the GPS related information of where they surfed and location of fellow Smartfin surfers. This should be taken into consideration when designing the corresponding smartphone app to maximize engagement with participants by highlighting the information most interesting to them.

Participant Surf Location



Respondents surf in locations around the United States and the world with the majority concentrated in Southern California which may be a result of the survey distribution. Other locations submitted include the Great Lakes, Baltic Sea, Chile, Peru, India, Canary Islands, Mexico, Fiji, Bali, Thailand, Nicaragua, Brazil, Uruguay, Costa Rica, New York, Virginia and North Carolina.

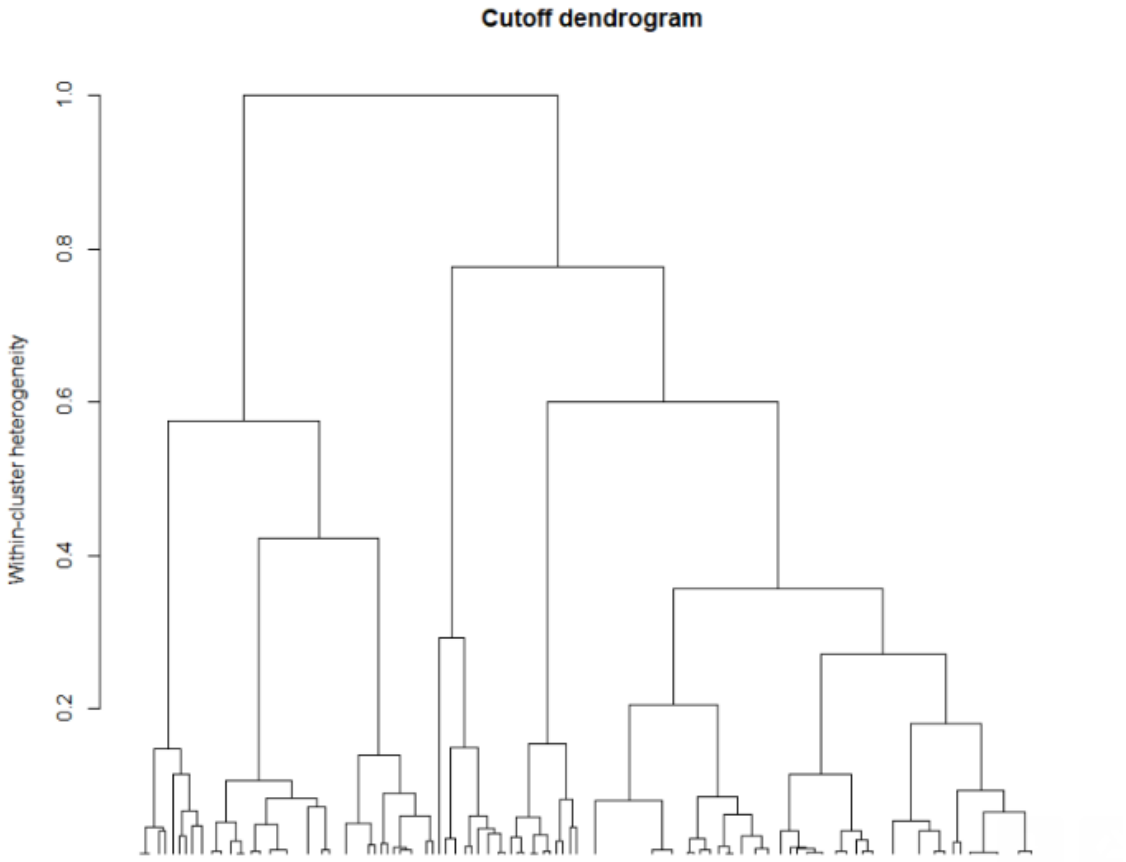
Source for Surf Content



Interestingly, the majority of respondents (71.4%) get their surf related content from Instagram. Surf websites follow with 51.7%, YouTube 39.5% and Facebook 34.7%. This can be useful information to generate targeted marketing campaigns reaching potential Smartfin users.

Analysis: Smartfin User Personas

A cluster analysis was performed with R software and Radiant which is an open-source platform-independent interface. Using responses from all of the questions and data collected in the survey, 11 groups emerged, 4 of which had clear differentiation from the other groups.



The following are personas that emerged from the cluster analysis and showed strong interest in participating in the Smartfin project (for more detailed information see attached excel spreadsheet).

Avid Surfer

- 20 people, majority men in their 30s
- Surfing for 6 or more years
- Surfs multiple times/week
- Prefers one-time annual fee
- Average WTP $98.95 for Smartfin

- Owns both shortboard and longboard
- Uses both FCS and Futures fins
- Member of local surf organization/Surfrider chapter
- Performance most important quality when choosing a fin
- Familiar with terms citizen science and crowdsourcing
- Uses performance trackers while surfing
- Always checks surf forecasting websites before surfing such as Surfline
- Concerned about environmental issues and ocean health
- Highly educated with graduate/professional degree
- Average annual income over $51,000
- Gets surf content mostly from social media with Instagram and YouTube as well as surf websites

Female Longboarders

- 19 people, majority women in their 30s
- Surf with longboards only
- Not members of local surf organization
- Surf to connect to nature and reduce stress
- Not big users of technology while surfing
- Do not use sport performance trackers
- Highly educated with graduate degrees
- Average annual income over $51,000/year
- Average WTP for Smartfin $77.00 one-time annual fee preferred

Standup Paddleboarders (SUPers)

- 11 people, men in their 40s
- Also surf regularly on other types of boards (majority longboards)
- Self-identify as early adopters of tech devices
- Well educated with graduate degrees
- Average annual income $82,000
- Average WTP for Smartfin $112.55 with one-time annual fee preferred

Smartfin Savvy Surfers

- 11 people, men in their 30s
- Surfing for 6 years or more
- Use shortboards most regularly
- Highest average WTP for Smartfin at $123.37

Discussion and Recommendations

This study is unique as it is one of the first to focus specifically on surfers and their motivations to take part in citizen science. Since there is currently no citizen science project involving surfers, it is important to understand their unique motives to design the project for maximum long-term engagement and success.

Recruiting surfers for science

After spending a year immersed in the Smartfin project, interviewing surfers and Smartfin team members, reading literature on citizen science, attending surf events, talking to stakeholders and conducting the survey described above, it is clear that there are members of the surf community that want to take part in a citizen science project with Smartfin. Based upon the survey results and the groups that emerged from the analysis showing strong interest in participating in surfing for science, these may be good potential subsections to connect with and recruit Smartfin users. Since the majority of these respondents said they get surf-related content on social media sites, primarily Instagram and YouTube as well as surf websites, these can be good places to find potential citizen science surfers.

Project design for long-term participation

The most successful citizen science projects are ones where the motivations of participants and stakeholders are aligned and the project is co-designed citizen science involving both groups (Geoghegan et al., 2016). Based on the feedback from survey respondents identifying the strongest motivators to participate as data collection and helping scientists understand the ocean, it appears that the motivations of participants and stakeholders are parallel. As a result, the opportunity for the project to be designed to engage participants is great and the app can be a powerful educational tool used to connect citizen scientists, stakeholders and the project team.

The literature also shows that for successful long term project engagement, feedback to participants should be specific, immediate, local and interpretable, focused on the individual and the impact of their contribution to the project. Also, consistent communication, satisfying participation motivations and the ability to move from a more passive role to a more active role within the project all encourage continued participation (Geoghegan et al., 2016).

Furthermore, citizen science projects that include technology find gamification helps increase long term project participation (Geoghegan et al., 2016). As described earlier from the Surf-First study, the average surfer in the U.S. is age 34

which falls into the age group classification of millennials born between the years of 1981-1996 according to the Pew Research Center (Pew Research Center, 2019). A study was done looking specifically at millennials in a technology-mediated citizen science project and the conclusion was that the gamification of the interactive app was key to engaging and attracting millennial participants along with social and educational motivations (Bowser et al., 2013). It has also been shown that public online acknowledgement recognition and monetary rewards help motivate citizen science participation in technology-mediated projects (Cappa et al., 2018).

Based on the literature review, my interaction with the Smartfin team and anecdotal evidence, there are several notable recommendations for the project team.

Suggested App Features

Interaction and engagement of Smartfin participants with the smartphone app will be key to the long term success of the project. While the fin is important in data collection, the app has the biggest opportunity for feedback, communication and education across all parties involved including citizen science participants, the Smartfin project team and the stakeholders using the data. This platform could also be used to increase visibility of scientific research to the public and lead to new suggestions for research questions.

Ideas include:

- Project feature feed within app to highlight studies that will incorporate Smartfin data to inform participants on their impact and contribution.
- Ability to tag projects to follow, prioritize and contribute data to and share with friends on social media.
- Geolocation push notifications informing Smartfin users of local projects in areas where they are surfing. For example, surfers in La Jolla area can be notified that they are surfing in a Marine Protected Area (MPA) and current research studies include kelp coverage, seagrass health, spiny lobster populations and sea urchin stability. Links to MPA and research project details could also be available within app notifications.
- Heat map highlighting areas that need data collected. Heat map could also have color coding corresponding to type of project in the area. For example, different habitats could have different colors or designs (kelp forest, seagrass, coral reef) and species related projects could include symbols for the specific species (spiny lobster, kelp bass, leopard sharks, etc).

- Smartfin users can reach higher levels of interaction with the project team with expansion of data collection including length of sessions, diversity of session location, time of year, time of day, tides, conditions, etc. The more surfers interact and collect data with Smartfin, the more opportunity they can earn to propose research questions, contribute ideas and receive invitations to stakeholder events.
- Recognition for Smartfin users that hit milestones set by Smartfin which could include amount of time in the water with Smartfin, length of membership, connection with other members, participation in community events, variation in Smartfin use in different ocean conditions, locations, time of day, year, etc.
- Smartfin users can set goals for themselves and achieve points, prizes, recognition when achieving personal landmarks. These could include contributing a certain amount or type of data to a specific study, number of new surf spots covered, variance in surf location by habitat or Marine Protected Area designation, number of waves caught, variation in geographical locations, etc.
- Non surfing Smartfin members can earn recognition for contributing outside of surf activities including educational outreach events, organizing community events, etc.

Survey respondents also expressed interest in knowing the information collected by Smartfin in the following order: water temperature, number of waves caught, length of session, GPS tracking of surf session and location of other Smartfin users. While performance and activity information is of interest to survey respondents, it should be noted that they ranked the lowest out of the listed participation motivators. Other surf performance activity tracking devices and corresponding apps that have been publicly available to consumers on the market have faced challenges, some with poor adoption and negative reviews and several of which have failed and are no longer being produced or sold. Examples of such surf performance tracking products are:

- Trace – Device resembling a puck that attaches to a surfboard that measures surf activity, pairs with GoPro and syncs with app to track number of waves, speed, ride distance, ride time, cutback angle, airs, etc. This device is no longer offered from the company itself and is only sold by third parties on Amazon.
- Nixon Mission Watch – Sport activity performance watch for surfing, snowboarding, synced with Google and Surfline to integrate tracking, activity, surf forecasting and tide information. This watch is no longer

offered by Nixon although is still supported by the company for existing users.

- RipCurl GPS Watch – Surf watch that connects to app with logbook for surf activity, ability to follow friends and pros to compare stats like sessions, speeds, number of waves caught, performance, time in the water. Users can create clubs with other watch users and plan surf trips, coordinate local sessions, share stats and connect with friends on social media. Available to access on all devices since it is cloud based and compatible with Surfline to get local tide information and real time conditions. Limitations include no integration with Android system.

Given the poor adoption of these surf performance tracking devices along with the fact that performance tracking ranked comparatively low in the survey results presented here, it appears that tracking activity should be a low priority for Smartfin. Potential users do not seem to be demanding this type of feature set nor does the market demand support it.

Future research suggestions

Future research to confirm willingness to pay for Smartfin could include a conjoint analysis to tease out more detail on drivers to pay for the fin. Also, a broader sample size for the survey could uncover additional groups within the surf community that may be potential citizen science for surfers.

Limitations

It is recognized that the sample audience may contain bias as they are more likely to have been exposed to the Smartfin project previously, educated in marine science, concerned about the environment and aware of ocean health issues based on where they discovered the survey. Also, there may be a bias due to the distribution of the survey through social media sites, sharing of the post from individuals and self-selection of participants.

It is also recognized that the survey design to determine the willingness to pay for the Smartfin uses a direct approach from respondents. This approach has limitations that include an exaggerated focus on price and not on other product attributes, customers do not have incentive to reveal their true willingness to pay, their valuation may not correspond into true purchasing behavior, it is a cognitively challenging task and the perceived value may be unstable (Breidert et al., 2016).

Conclusions

The need for increased data collection in the coastal surf zones is clear and a potential solution equally as clear. Surfers represent a large and rapidly expanding population that spend significant amounts of time in coastal areas. Currently there is no citizen science project engaging the surf community. Smartfin provides a mechanism that empowers surfers to become citizen scientists and collect oceanographic information on a grand scale globally. The survey results support the notion that surfers are motivated to participate in citizen science and would use a Smartfin. Their willingness to pay for a Smartfin will provide a sustainable revenue stream to support the continued expansion of the project long term. Motivations for participation have been clearly defined as have the ideal Smartfin users, where they spend their time both physically and digitally and what their habits, preferences and interests are with regards to surfing. The opportunity of successfully engaging this community in the project is great as a result of their motives being aligned with stakeholder interests. The app will be an important tool to connect participants, stakeholders and the project team and provide a central location for communication, feedback and education to satisfy the motives of Smartfin users. With this roadmap as guidance, the project can continue the momentum to launch a wave of citizen science surfers with Smartfin.

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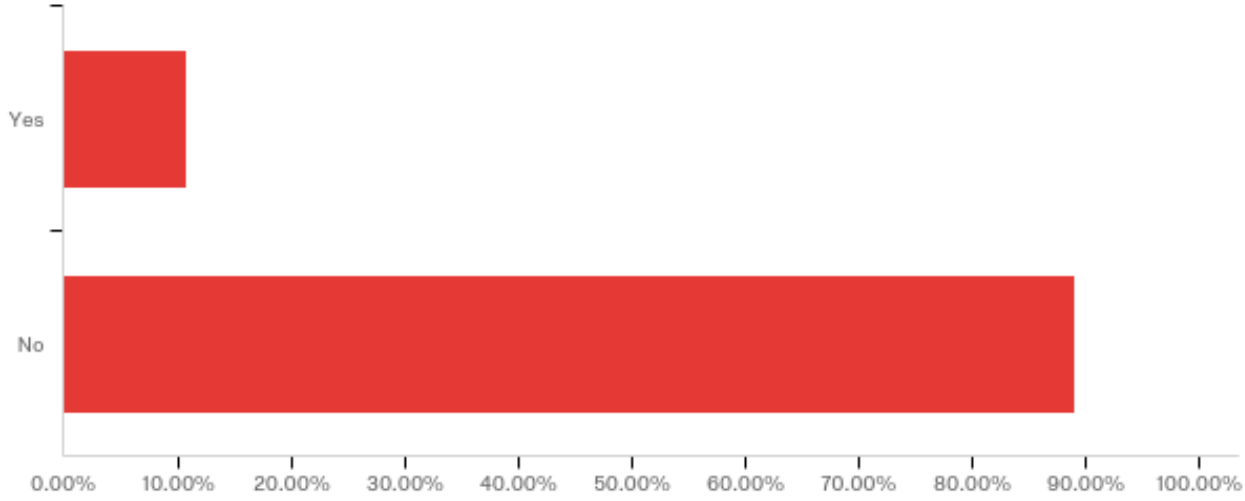
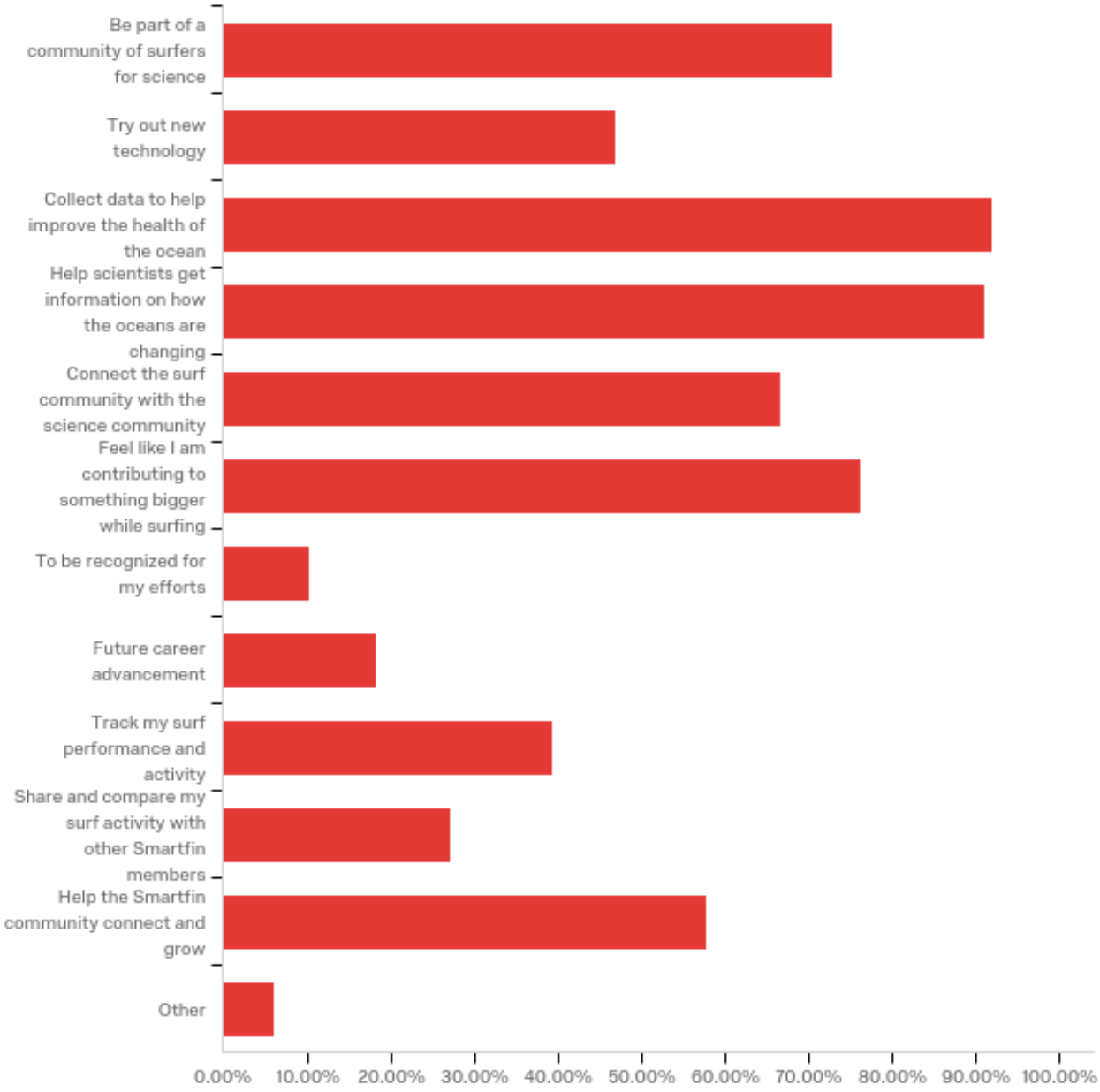
Appendix

Copy of Survey Questionnaire Responses
Surfer Preference Survey 2.2
June 12th 2019, 11:58 am MDT

Have you ever surfed with a Smartfin?



What would motivate you to use a Smartfin on your board and become a member of the Smartfin community? (Check all that apply)



QID43_13_TEXT - Other

Other - Text

To learn that smart fin is as quality as regular fins. Also if they made them in a 9" longboard noserider design i'd be inclined to buy one

I studied climate change and now use photo and film to raise awareness of threats facing our planet. I would love to be of use to scientists every time I go surf in Cornwall which I try at least once a day. Up to three times a day when surf is pumping 😀

Help scientists get information on how the Great Lakes are changing as well as the oceans because I surf on both

Be the first to implement this on a zero emission electric hydrofoil where we can cove huge areas in a short amount of time and need some of these statistics anyway. It's cosmic I'm writing this right now. It's exactly what we need for @wefoil 🙌🏽

Citizen scientist is a fantastic idea

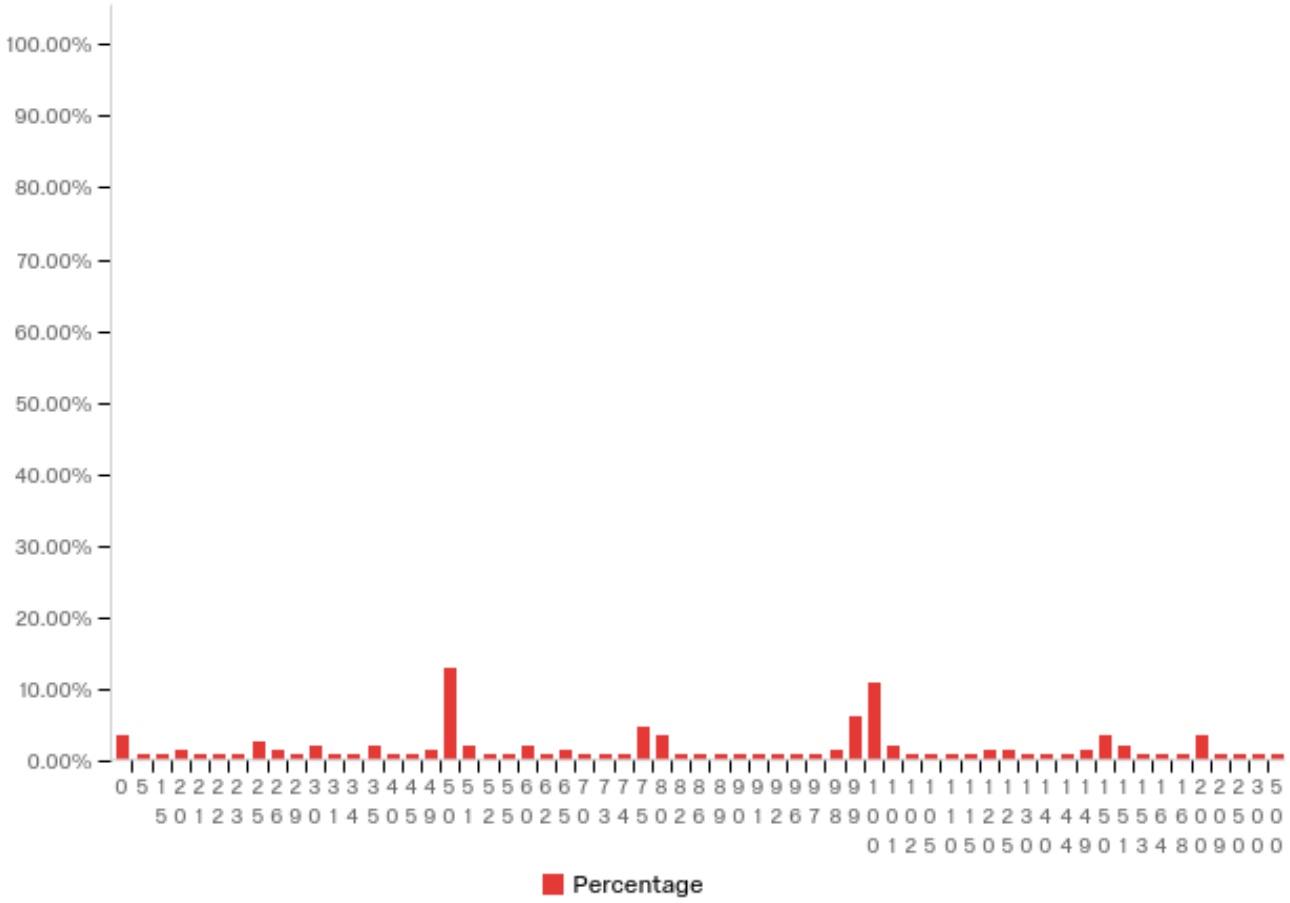
I'd want a 10" pivot fin for my longboard in Maui! ;)

Making it more accessible to lower-income folks. While the data collected is incredibly pertinent to oceanic health, it is not revolutionary in the way that it is inaccessible. The potential cost of the product ensures it will not be, and I would urge you to reconsider what locations you intend to share this product with.

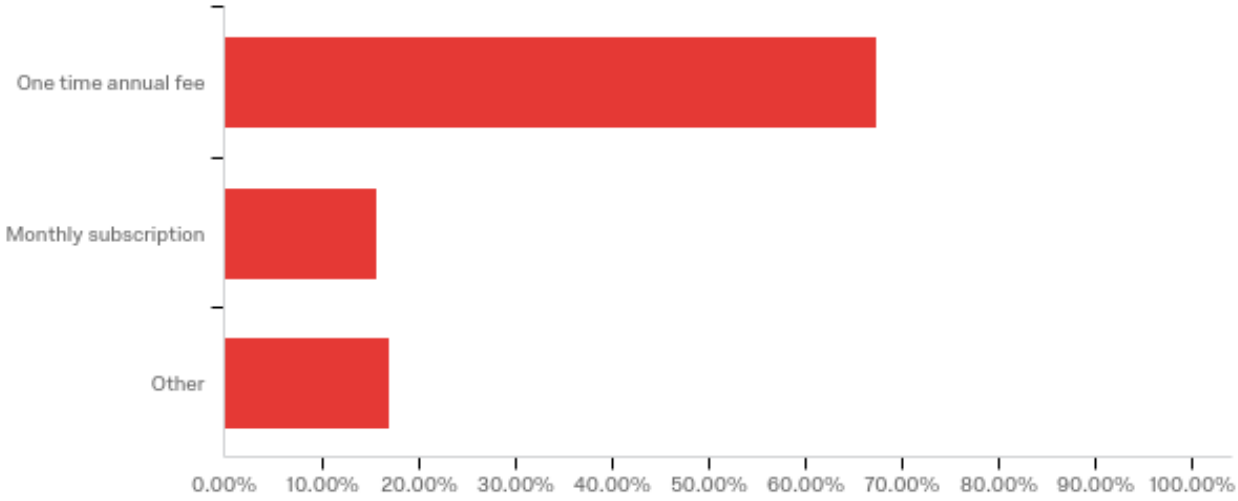
Learn more about data processing in ocean sciences

Get a "linea base" of water conditions an pro biodiversity parameter of my nearest beachs where I surf. This base line it will be usefull at the moment of charectisice any part of the coadt with the aim of protect it of our development.

What would you be willing to pay to get a Smartfin for your board and become a member of the Smartfin community? (use slider to indicate dollar amount)



If you were to get a Smartfin and become a member of the Smartfin community, would you prefer to pay a one time annual fee for membership or a monthly subscription fee?



QID49_3_TEXT - Other

Other - Text
Would prefer a one-time purchase on the order of $100 and no recurring fee.
What am I gaining by paying?
True 1 time fee, not annually
I would want to pay only for the initial purchase of the fin set, not recurring payments.
Not willing to pay
No quiero pagar
Overall Set amount
One time fin purchase, no membership fee
If I have to pay a fee I wouldn't buy it
No monthly or annual fee
One time fee for the life of the fin
Pay per use if there is a legit app to connect with. Or buy a membership flat out and rock it every day like I would.

I prefer to not pay since I would already be contributing with my time.

Neither. I wouldn't pay to be involved

I'd unfortunately not want to pay but am willing to help collect data for the cause!

I would prefer to purchase it one time, one time fee. I am not interested in having the data for personal purposes, but to act as a vehicle to provide data to scientists. I don't see a reason in this scenario to need a subscription or pay continuously. I see it as a vehicle for scientists to collect free data. Kinda sad if they want to continue to profit off of me.

What does this cost cover?

Why are you paying?

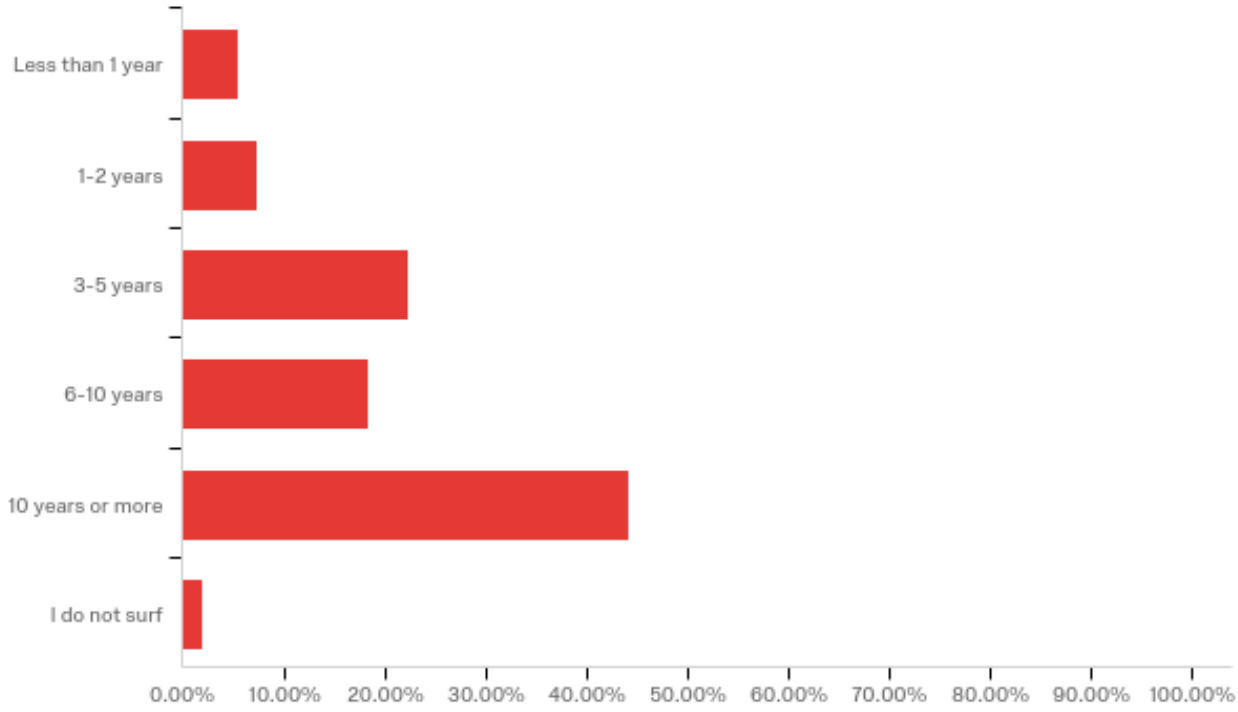
One single time fee

none

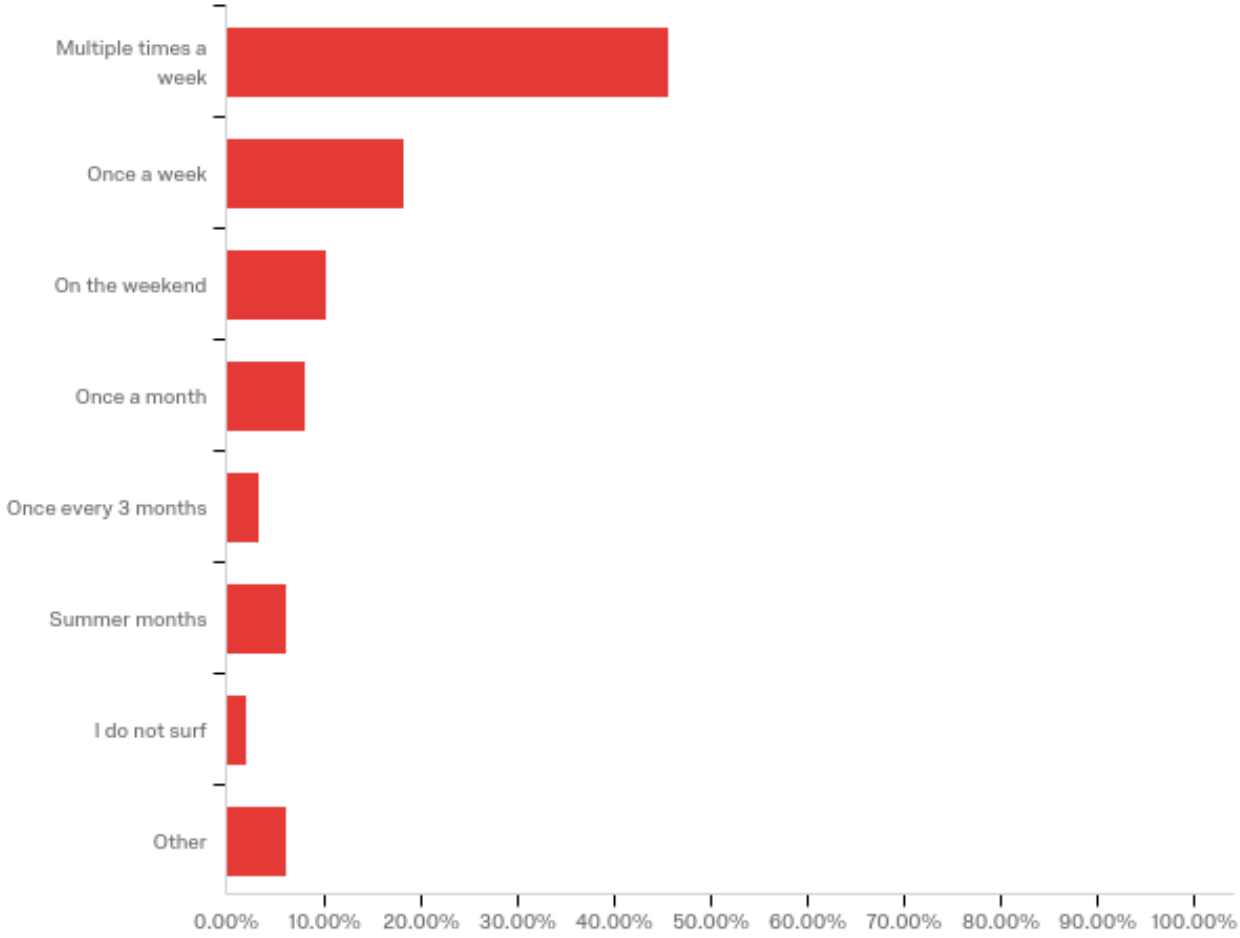
I would like one fee up front when I buy the fin.

probably wouldn't pay for it

How long have you been surfing?



Typically, how often do you surf?



QID1_6_TEXT - Other

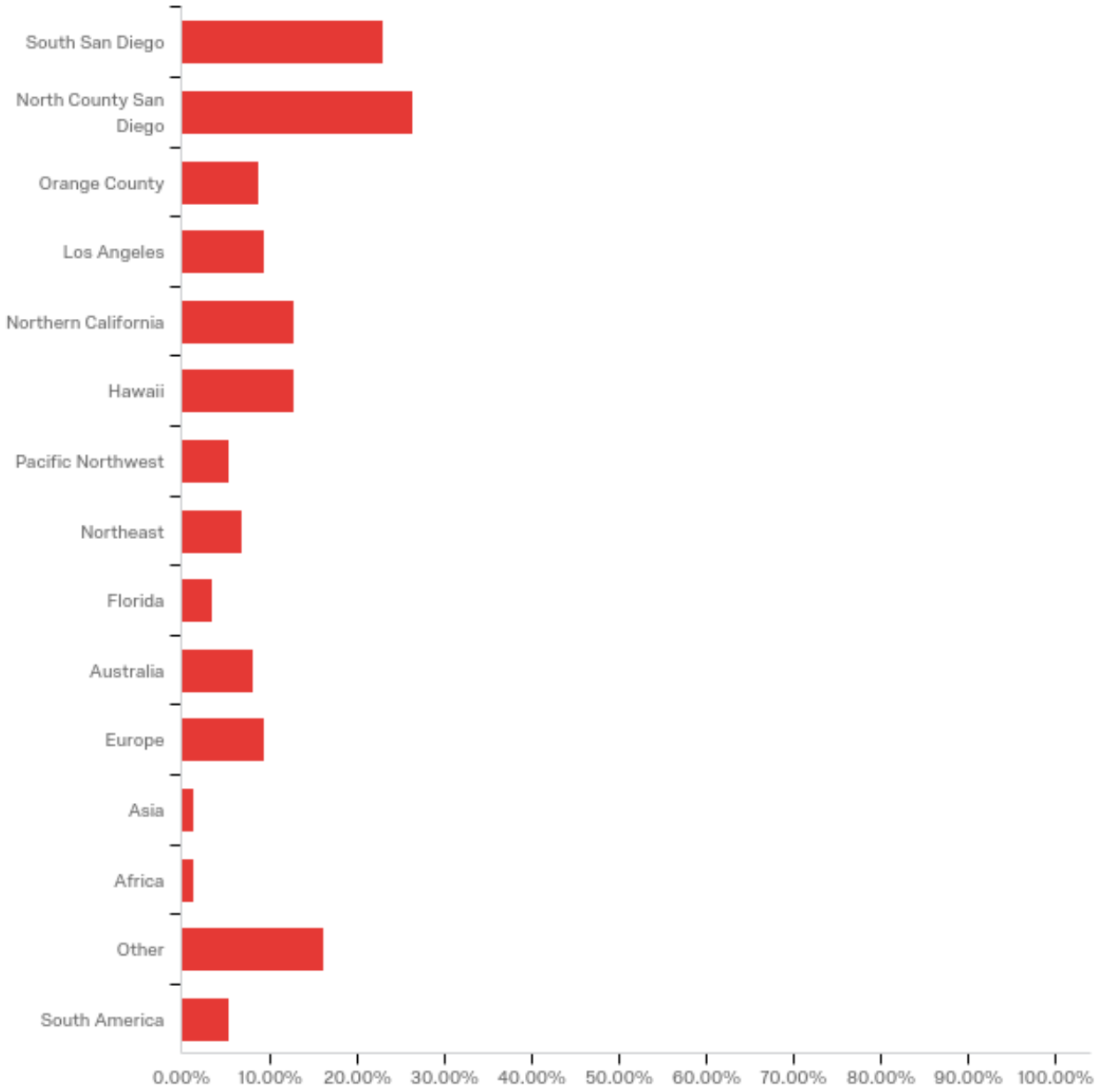
Other - Text
daily
1-2x year
Everyday
Durning the winter season when swells are good....when it's ion I surf multiple times a week.
Multiple times throughout the year
Almost every day and sometimes many times in one day covering huge ground on the foil and efoil

Not an avid surfer but I will try it out on occasions need to take lessons.

Limited during winter/spring and more frequent (at least every other weekend) through summer and fall.

Either surfing or paddle boarding 3 or more times a week

Where do you surf regularly? (Check all that apply)



QID52_9_TEXT - Other

Other - Text
North Carolina (South East)
Santa Barbara, Los Angeles, North County SD, San Francisco, Mavericks
India

Usually go on two trips a year for shoots

north of Los Angeles, south of northern California

Islas Canarias

Mid Atlantic, OBX NC, Charleston SC

Mexico

The Great Lakes

New Zealand

Nicaraugua fiji

Bali and Thailand for testing Starboard SUP's

Cornwall, UK

Fiji South Pacific(not regularly)

I dont

Santa Barbara/Ventura

Monterey CA

Chile

Costa Rica

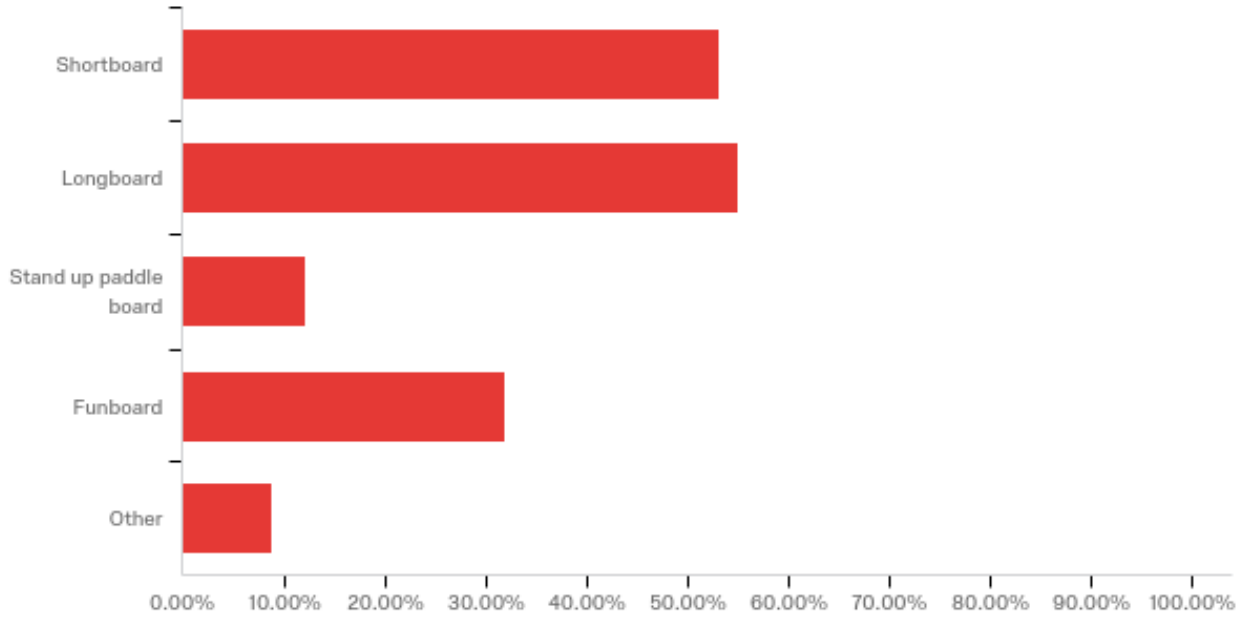
New York City, Rockaway Beach

Virginia and North Carolina

East Coast

Santa Barbara (just moved from SD)

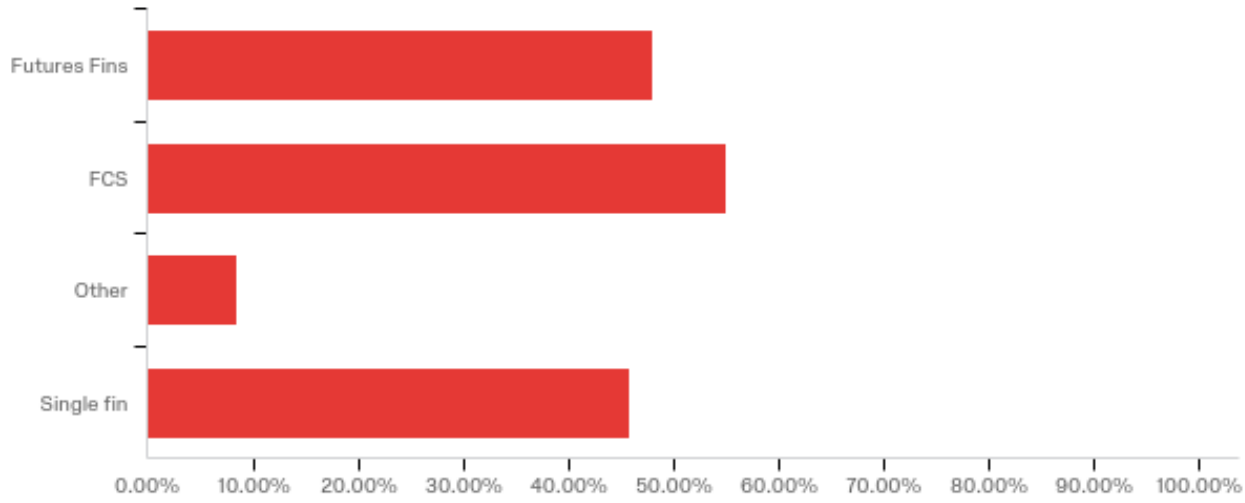
What kind of board do you most commonly use? (Check all that apply)



QID2_5_TEXT - Other

Other - Text
Foil
Longboard and shortboard equally
Have a selection as conditions vary in Cornwall and I like to have Fun w
Fish
Hydrofoil
Fish
Foil
NA
gun
Single fin
fish

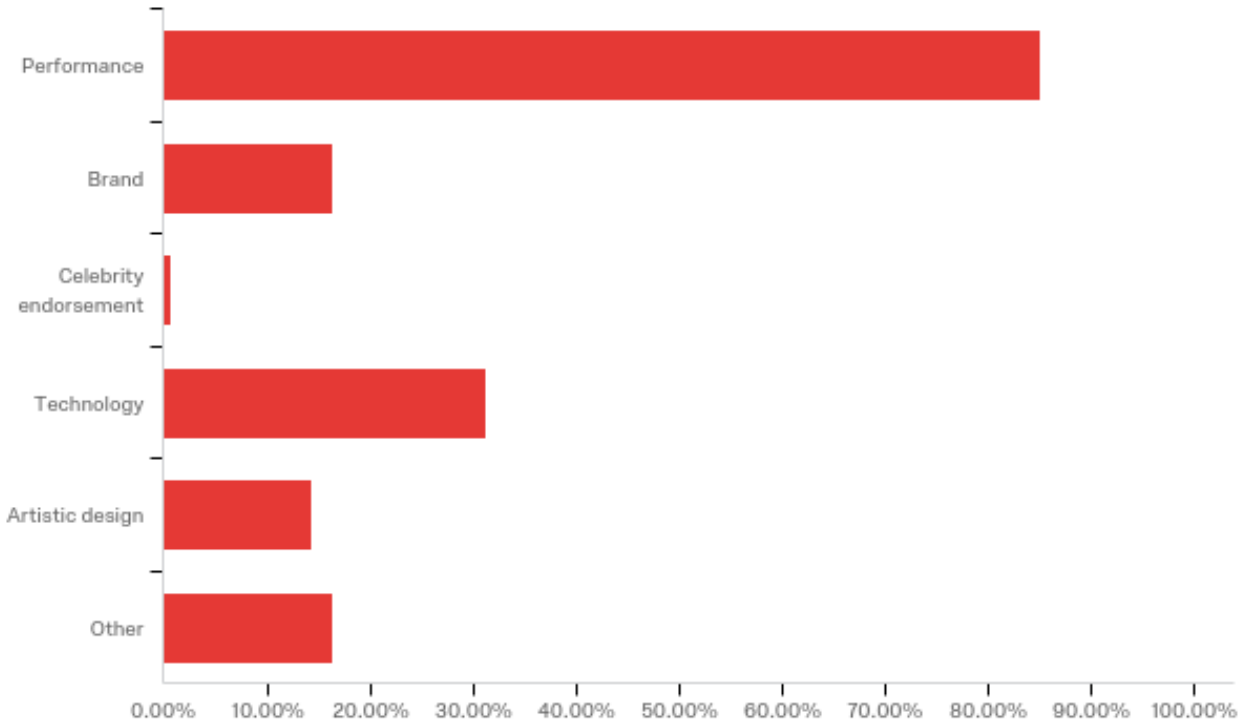
What kind of fins are compatible with your most commonly used board? (Check all that apply)



QID4_3_TEXT - Other

Other - Text
Mini tuttle
Foil
Fcs2
Hydrofoil Tuttle and plate mount platforms
Chimay, You could design an adapter that could sit in the 1-2” of unused space in a 10.5” longboard finbox. I did something similar recently for a different purpose and would be happy to share the design- Joe Sunde
FCS II
Fcs 2
Wavestorm
NA
thruster arragement

What do you find most important when deciding on which fin to use with your board? (Check all that apply)



QID37_6_TEXT - Other

Other - Text
I am a board nerd.
Price
In a place like India-availability.
Brand, in the sense that the fins can be interchanged with my other boards
Price
Price
Precio
Shape
I like futures the best
Price. I'm not a pro, I don't need the best or flashiest design

Conditions

Price

Brand is basically dictated by the board, then it’s just size.

I choose fins that are the correct size and shape for my board. I guess that falls under "performance".

Accessibility

What the board comes with

Price

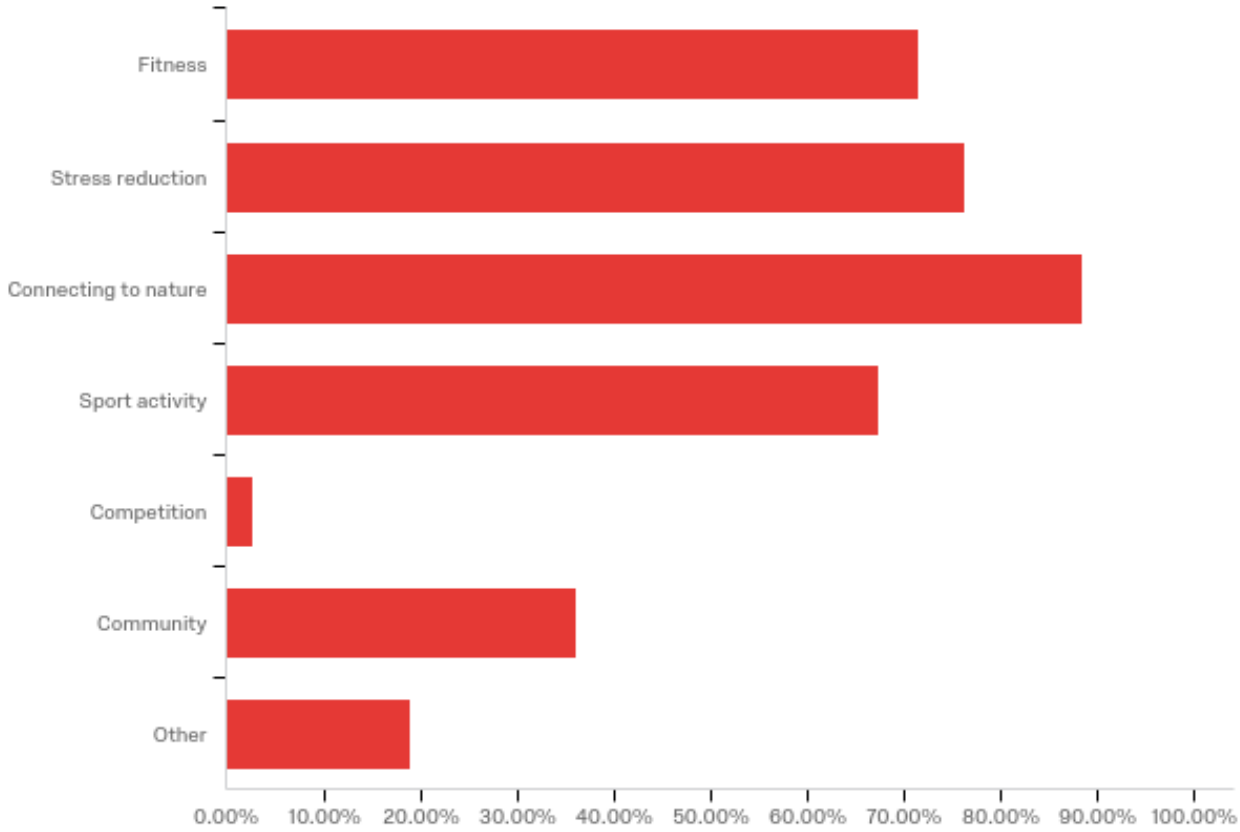
NA

don't really care

shape, quality

Whatever the shaper uses

Why do you surf? (Check all that apply)



Q31_6_TEXT - Other

Other - Text
Love of flow.
Meditative but that might be considered stress reduction
Continuing traditions with our peoples seafaring legacy,
Stoke
Creativity
Estar en el mar
The feeling of floating on water is intoxicating.
For meditative time
Love for the rush and love for the wate

Fun

Why wouldn't I?

Fighting PTSD

It's the greatest thing we can do for fun and in this case science.

Because I can.

It is a passion and something I need in my life!

Because it's better than church.

FUN

Love of the ocean.

To learn how to surf and take lessons

Fun!

stoke

NA

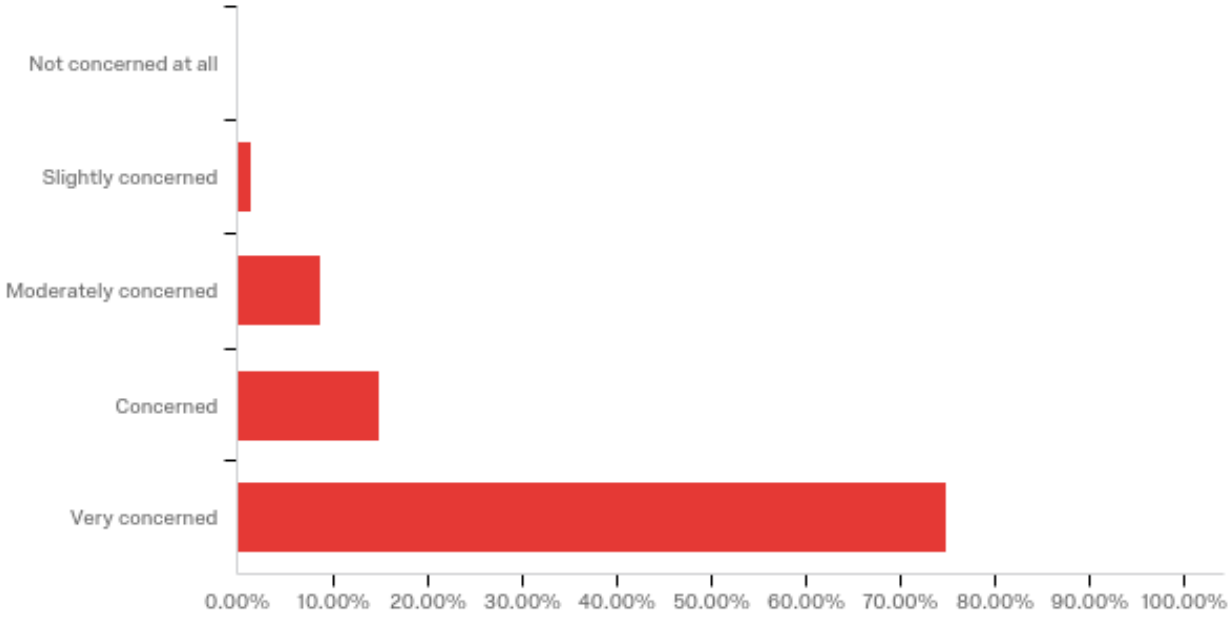
Joy

Love to surf..

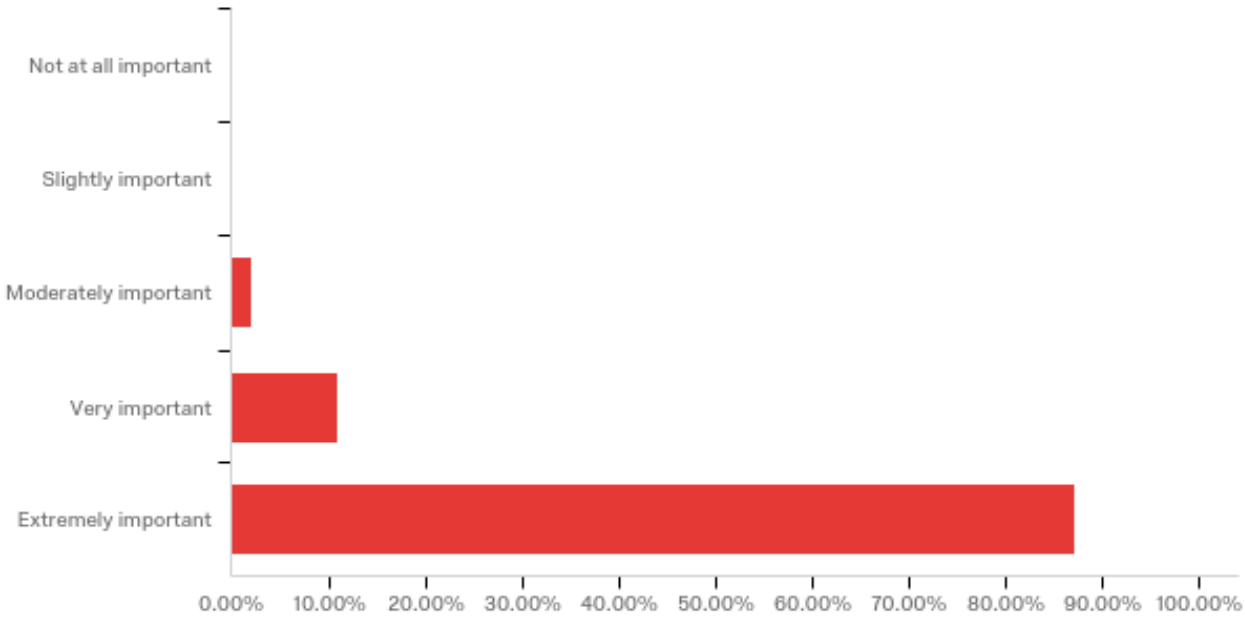
I simply love being in the water, even if the surf is bad.

no idea

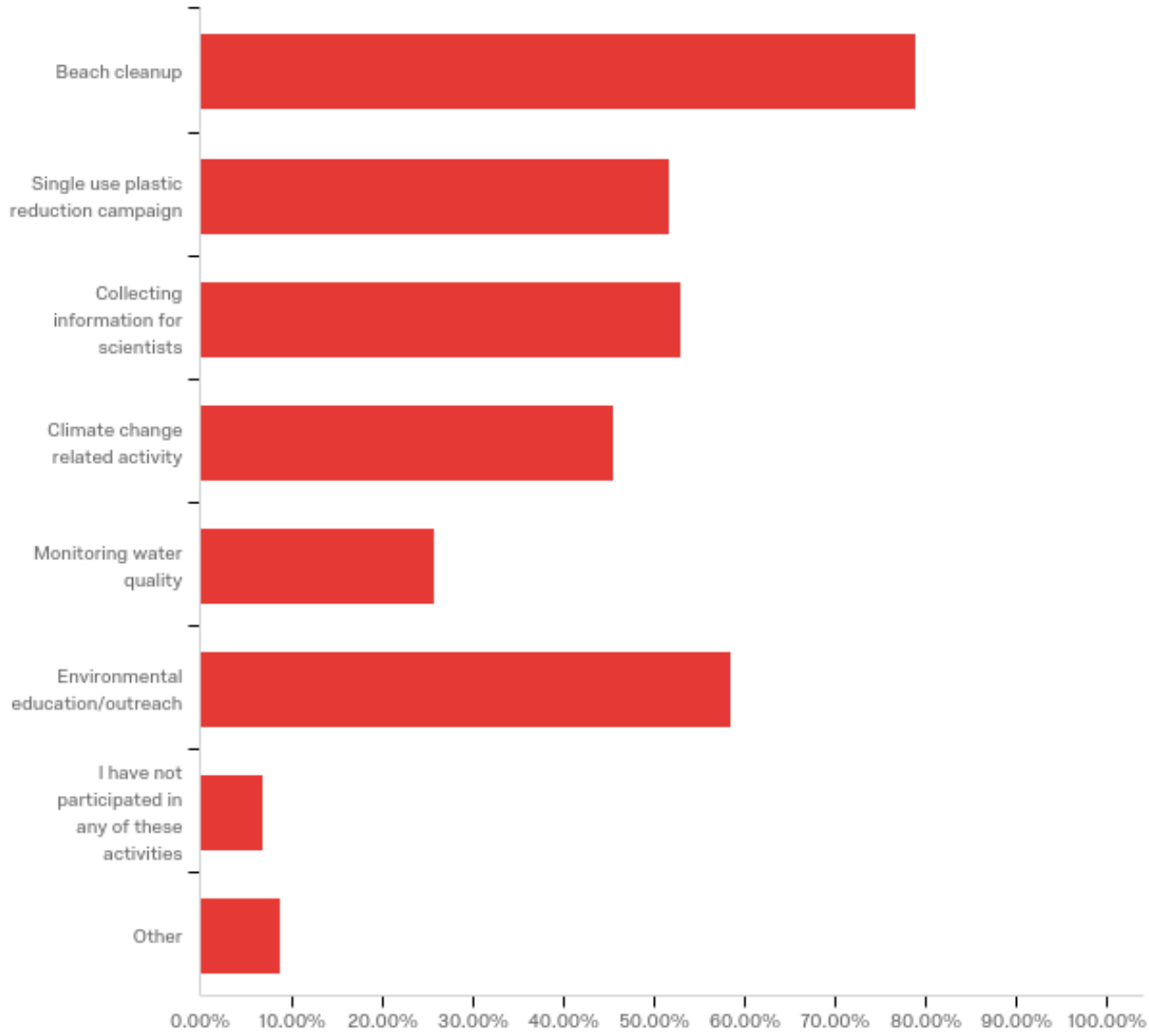
When it comes to environmental issues such as climate change, how concerned are you?



How important is the health of the ocean to you (for example habitats like coral reefs, fish populations, ocean acidification and plastic pollution)?



Which of the following activities have you volunteered for? (Check all that apply)



QID56_9_TEXT - Other

Other - Text
Mangrove restoration and conservation, orinthological surveys, beach forecast surveys, dolphin rescue and relocation, reptile management programs etc
I'm an environmental scientist, I chose this pursuit as my profession.
Investigación

NOAA NCCOS Marine biologist and GIS Analyst

Write letters to elected officials on environmental issues.

Trash and litter pick up

I have a wetsuit recycle in my surf shop the only one for miles around, for Suva which turns them into yoga Matt's at this time

Fighting cruise ship pollution

Scientific Diving Surveys, Coral Reef Assessments

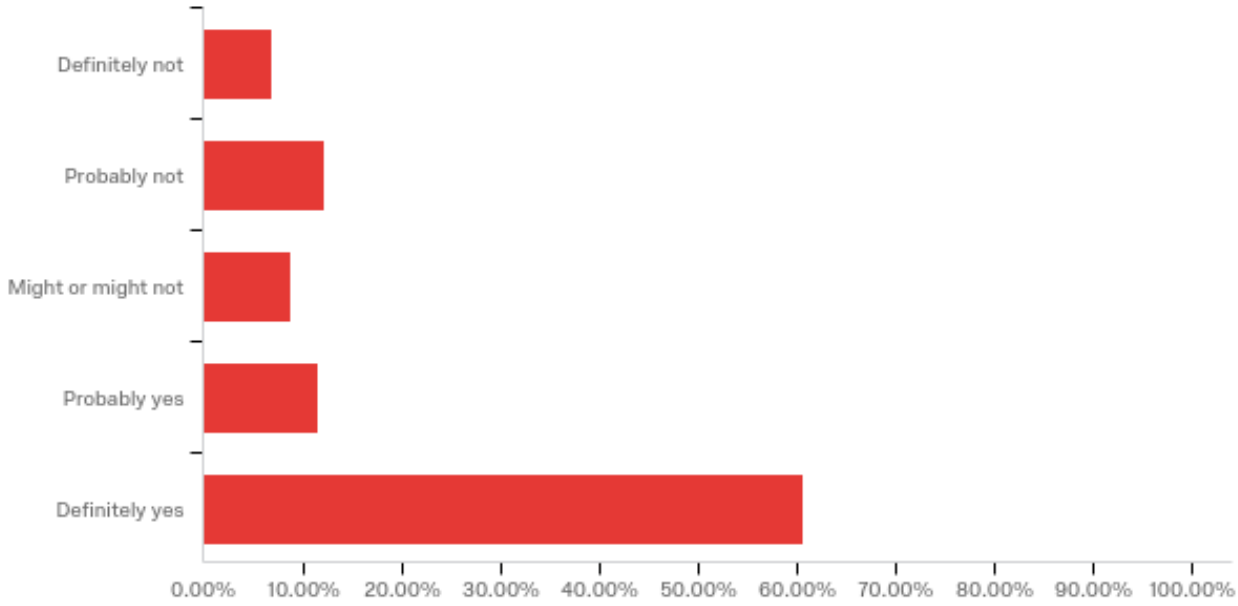
Fishing line collection boxes at heavily trafficked fishing spots

My own climate research - carbon related

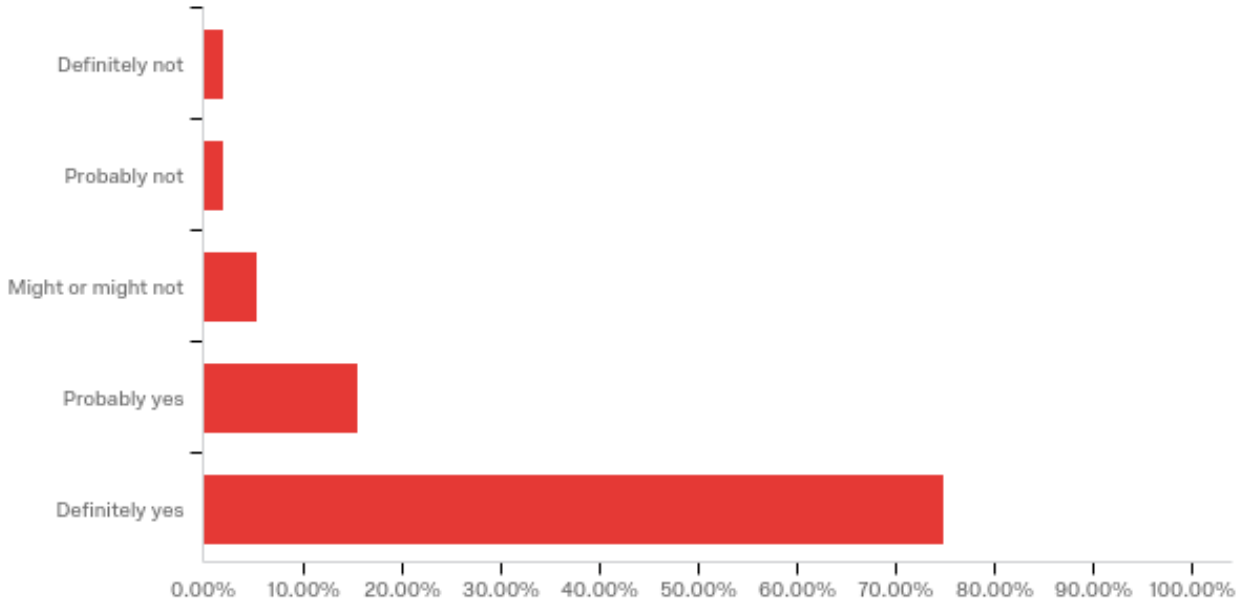
starting an NGO

In part of a fundation that seek environmental conservation

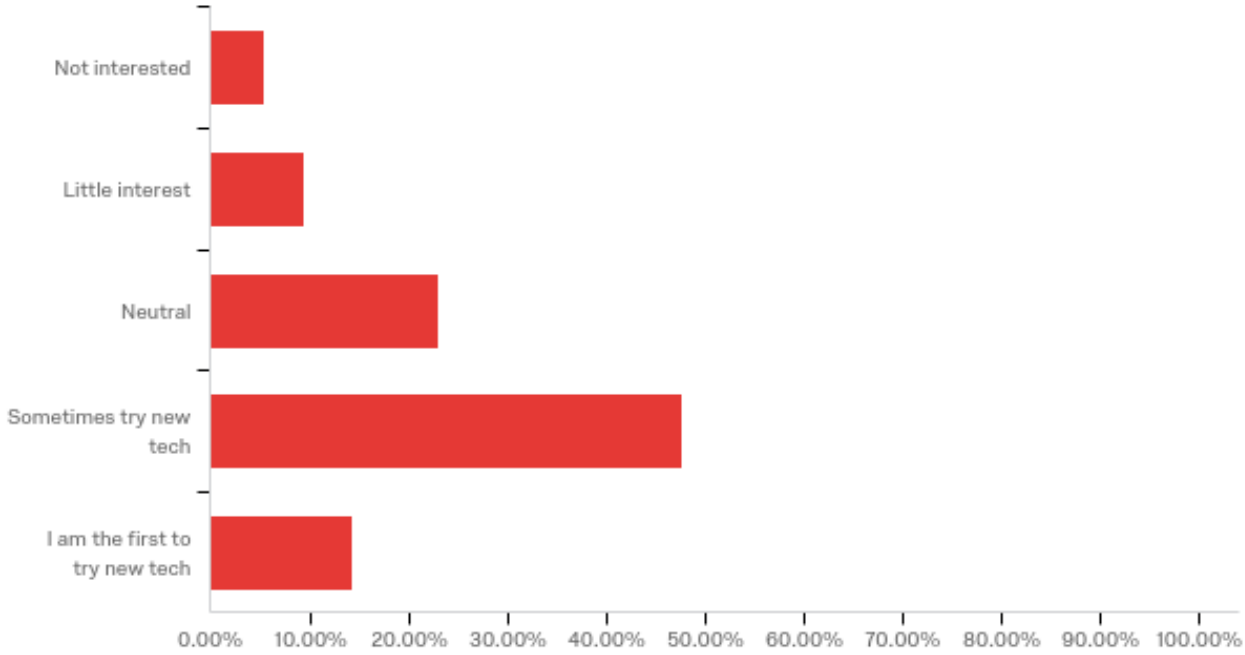
Are you familiar with the term citizen science?



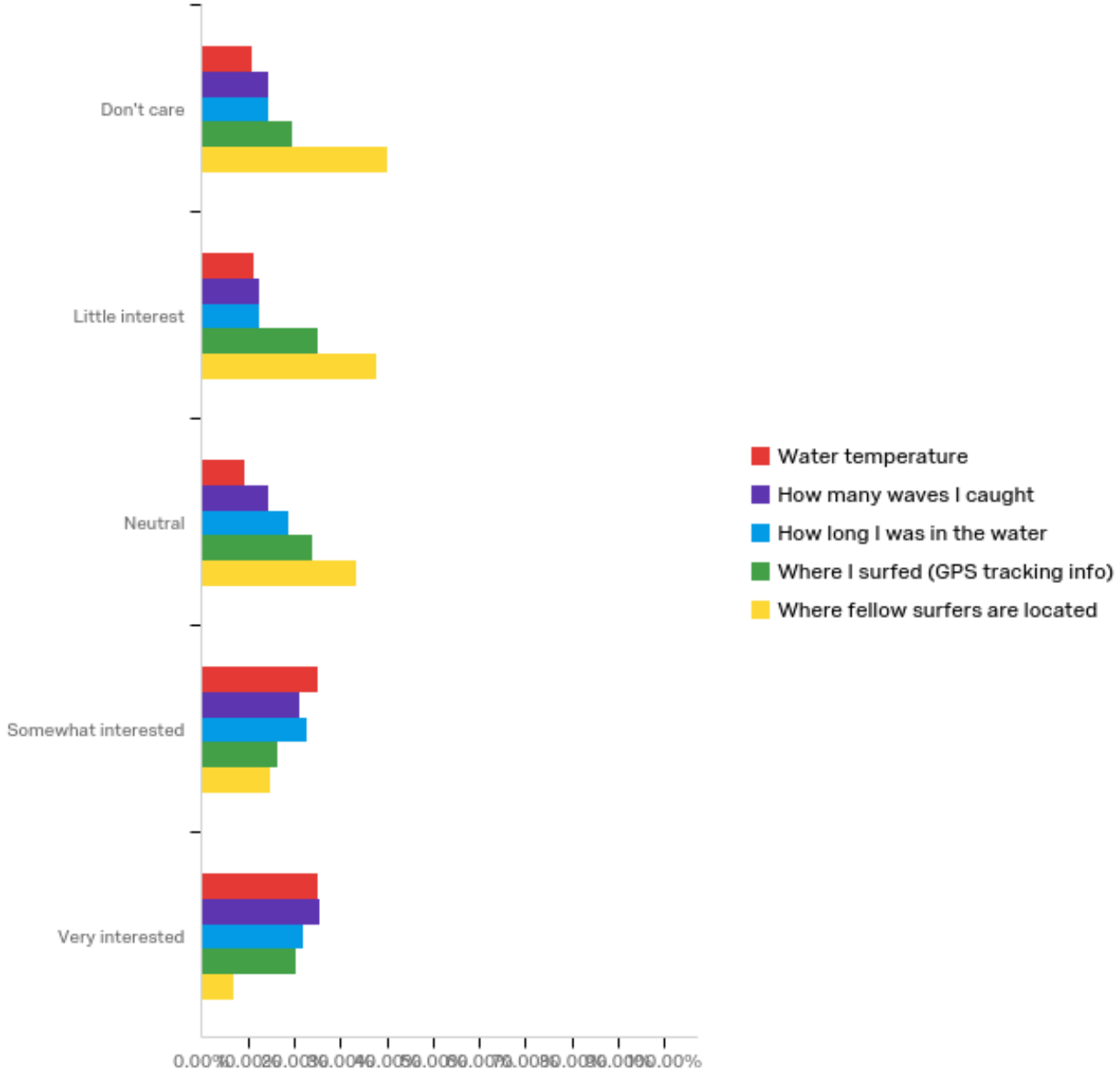
Are you familiar with the term crowdsourcing?



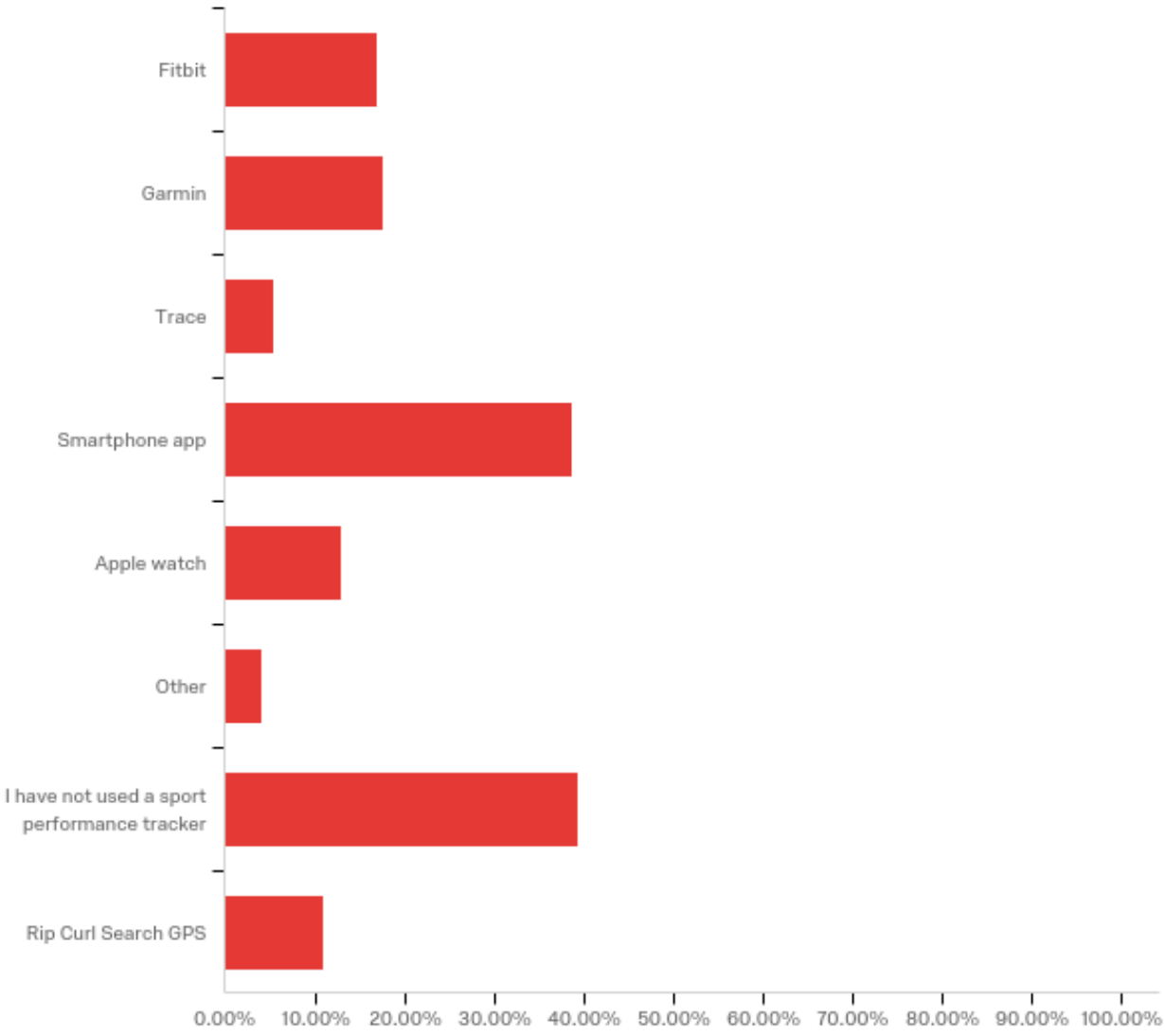
How would you classify yourself when it comes to trying out new tech devices while surfing (example tide watches, Go Pro, Trace, etc)?



What information would you like to know about your surf sessions?



Which of these sport performance trackers have you ever used? (Check all that apply)

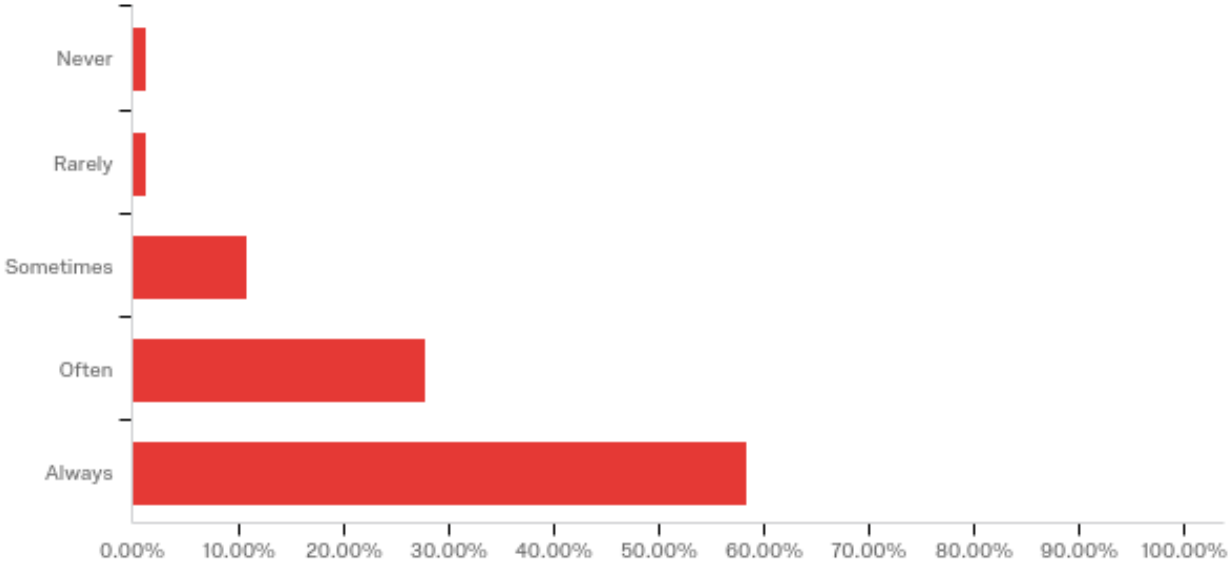


QID17_6_TEXT - Other

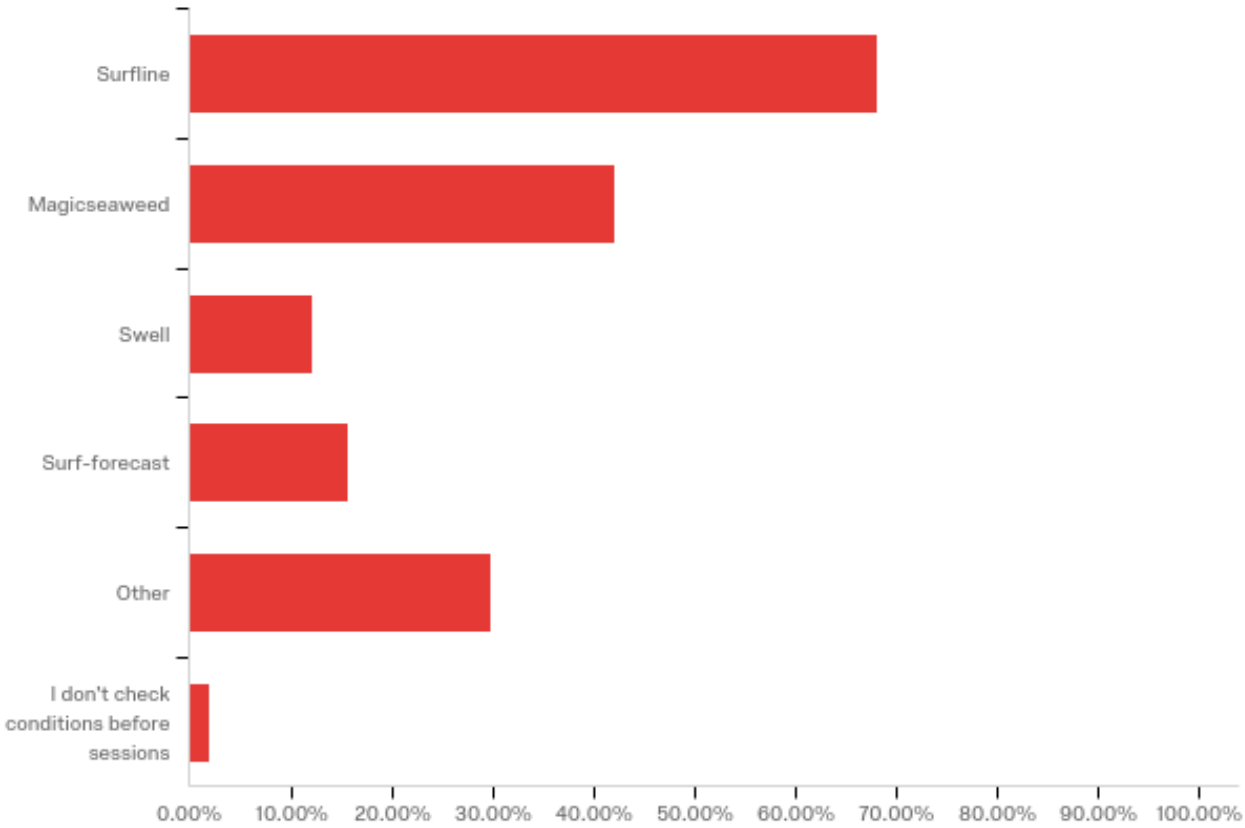
Other - Text
ultratide watch
Nixon Mission
GoPro tracking
Use Strava for cycling and running. But have never used anything for surfing.

MS Band 2

How often do you check surf conditions before surfing?



What source do you most commonly use to check surf condition forecast? (Check all that apply)



QID33_5_TEXT - Other

Other - Text
windy, storm surf
Buoys and Windly
Tides4fishing
Swellnet
Windy.com
Stormsurf.com windfinder.com weather.gc.ca
Wind guru
Australia BOM

Surfguru.com

Hdontap

NOAA Great Lakes Coastal Forecasting System

Willy Weather

Windguru

Look.surf

Weather radio noaa

NOAA. Surfnewsnetwork

Swell magnet

Live cam

Swellinfo, cdip

CDIP

Windy, FMI, Aaltopoiju

Friend text chain

Coconut wireless

Local buoys

Beach cams

Looking outside

Noaa swell forecasts

cdip

Windy

Coastalwatch

CDIP, NDBC: https://www.ndbc.noaa.gov/station_page.php?station=46042

xcweather

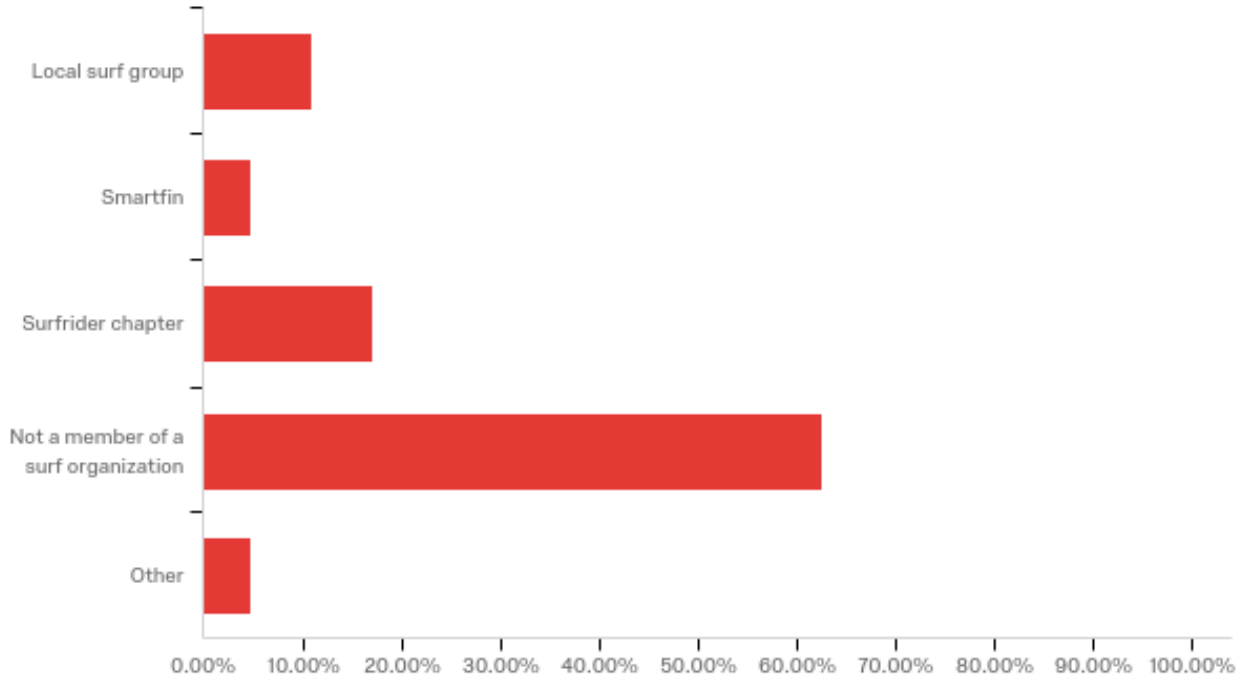
Windy, Windfinder

Cdip

in person, buoyweather

Swellinfo, blueskysurfreport.com, report.priester.net/buoy.asp

Are you part of a surf organization/community? If so, which one?



QID50_1_TEXT - Local surf group

Local surf group - Text
Eastern Surf Association (ESA), Wrightsville Beach Longboard Association (WBLA), also Surfrider but it will not let me click multiple selections
Merewether
Newquay just general local know a lot of people down here might be interested keen to spread the word
Club de surf oleaje, asociación para el desarrollo del surf sostenible en el norte de gran Canaria
Kenosha Surf and Surf Milwaukee
Cowabunga Collective
South Bay boardriders club
Malibu boardriders
Matunuck surf association
Maui surf community

PB Surf club, SD surf ladies

San Diego surf ladies

PB Surf Club

SurfersforScience

QID50_5_TEXT - Other

Other - Text

Surf school instructor

Anonymous

Sustainable Surf ambassador

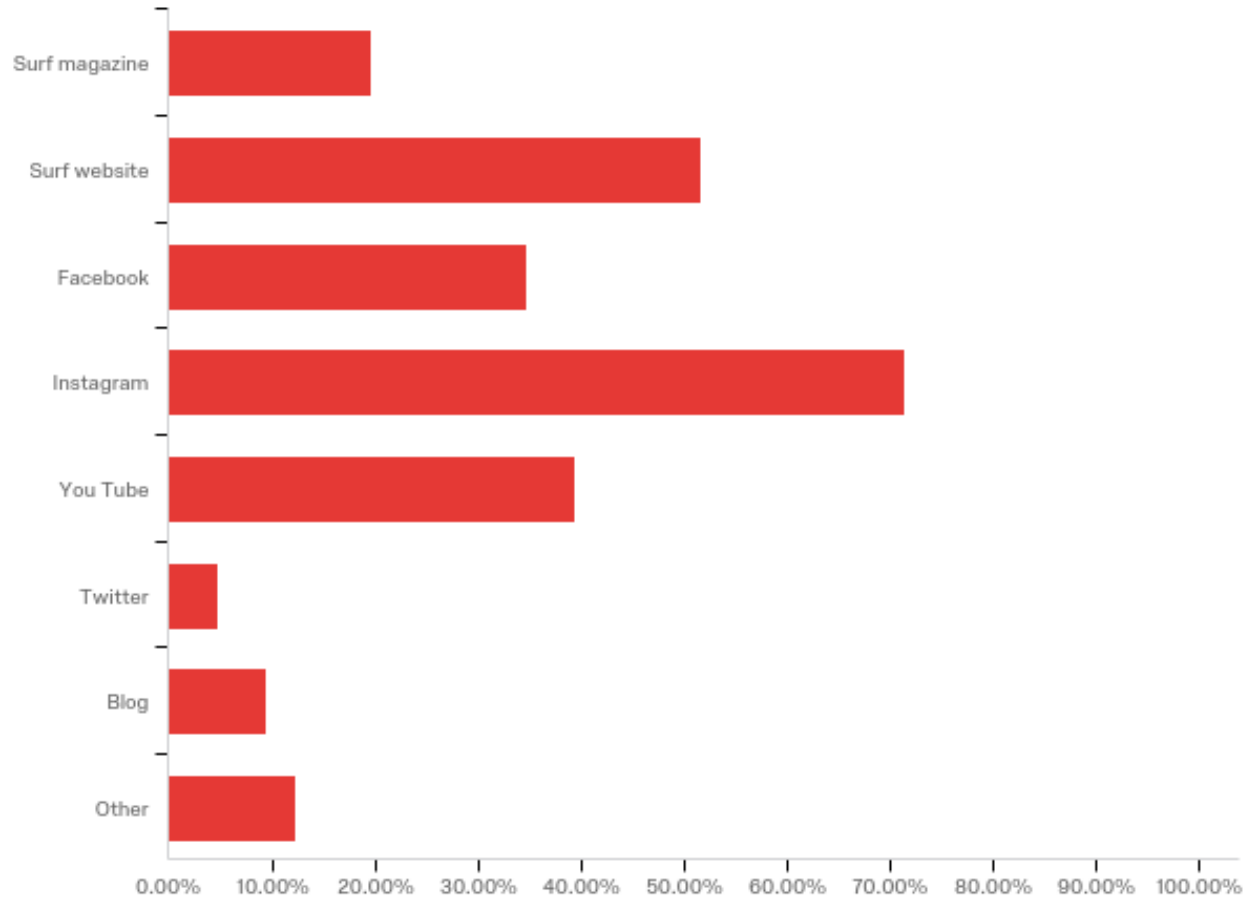
Trying to click more than one button and not allowing it. I am member of La Jolla shores surf assoc, Smartfin and surfrider

H20 trash patrol

Sustainable Surf

I am the girl from England who is also doing research for Smartfin :)

Which of the following sources do you use on a regular basis for surf related content? (Check all that apply)



QID29_6_TEXT - Other

Other - Text
Vimeo
Nobody surf app
r/surfing subreddit
World Surf League
Mags
N/A
Santa Cruz Waves

WSL

Apple News

nobodySurf

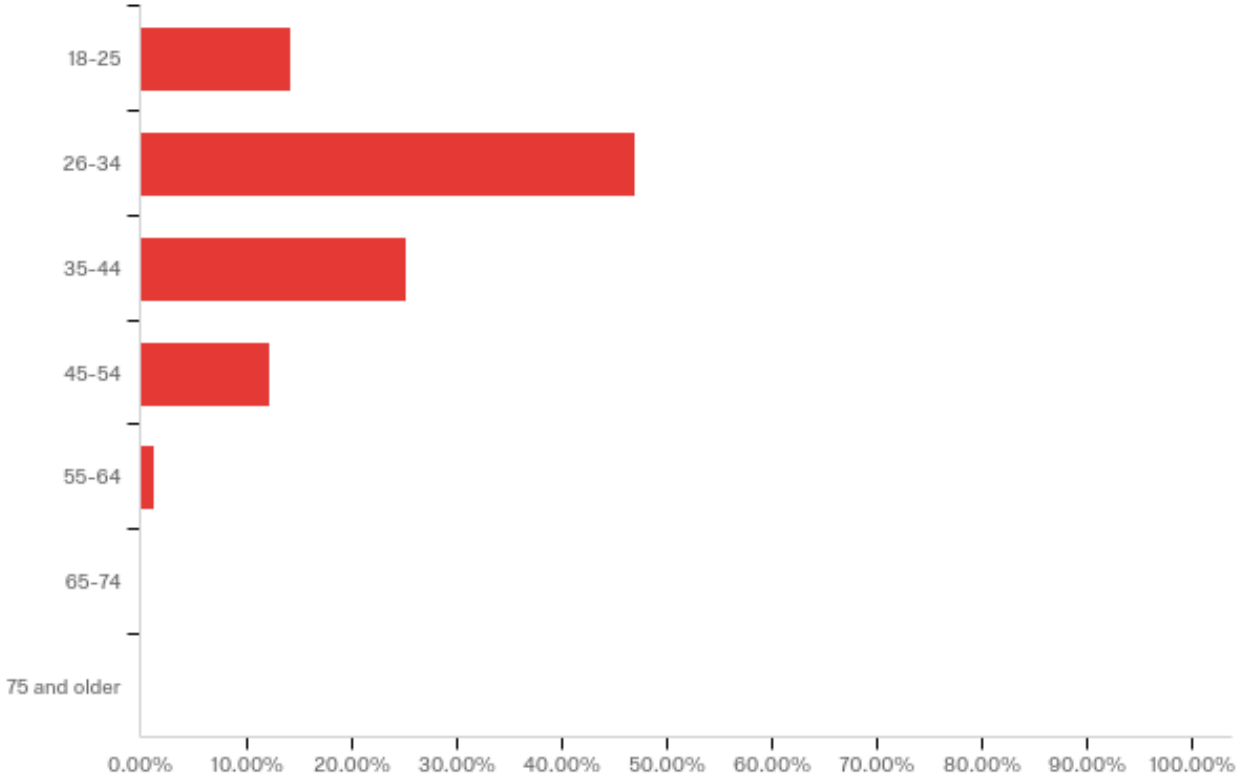
None

reddit.com/r/surfing

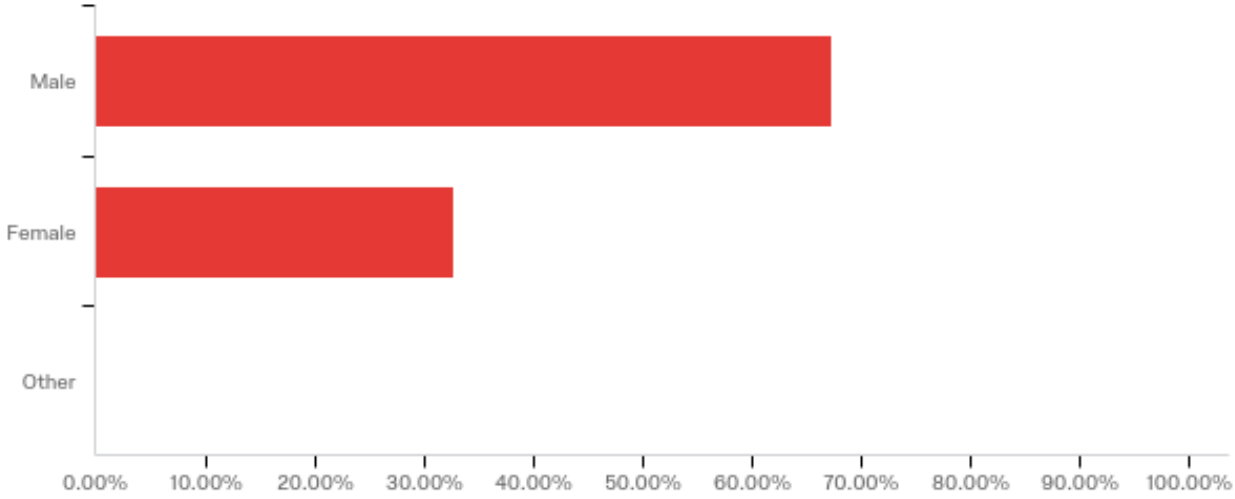
reddit

None

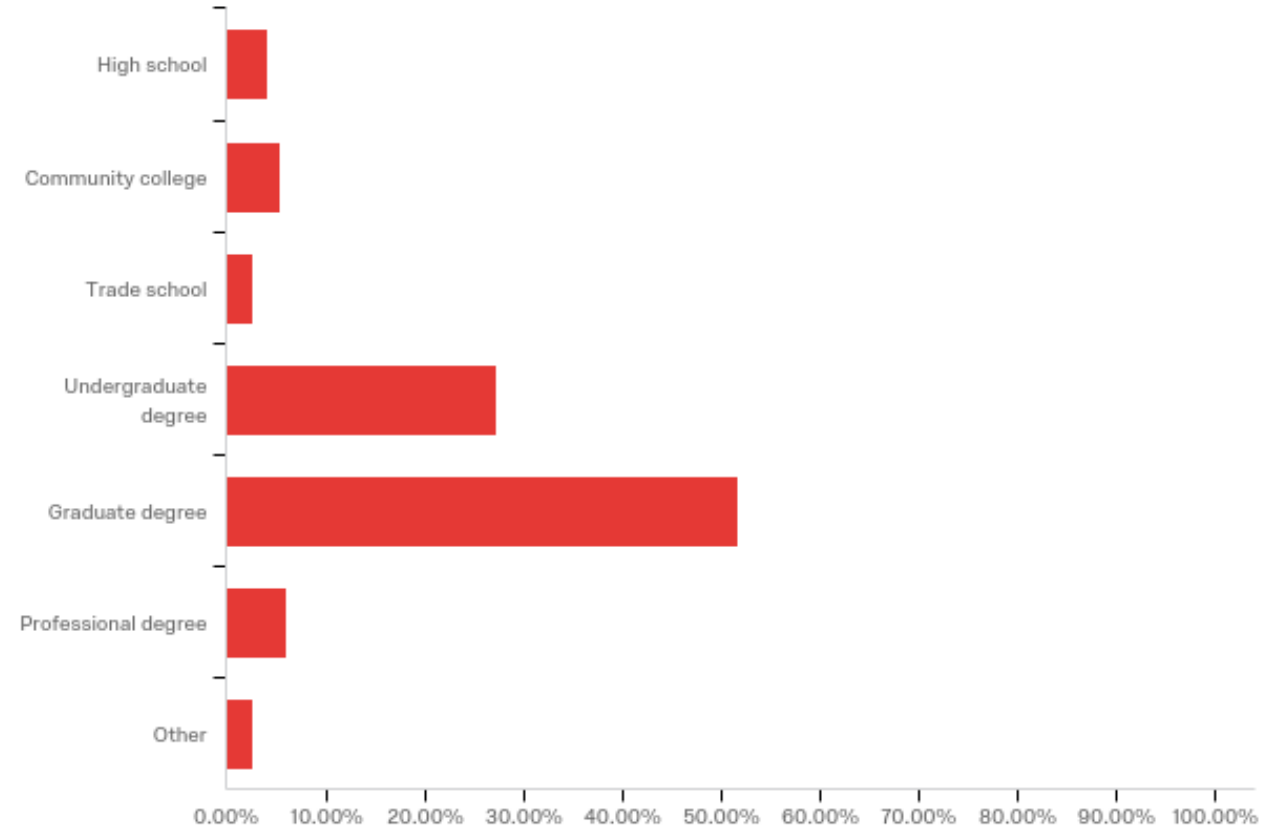
What is your age?



What is your gender?



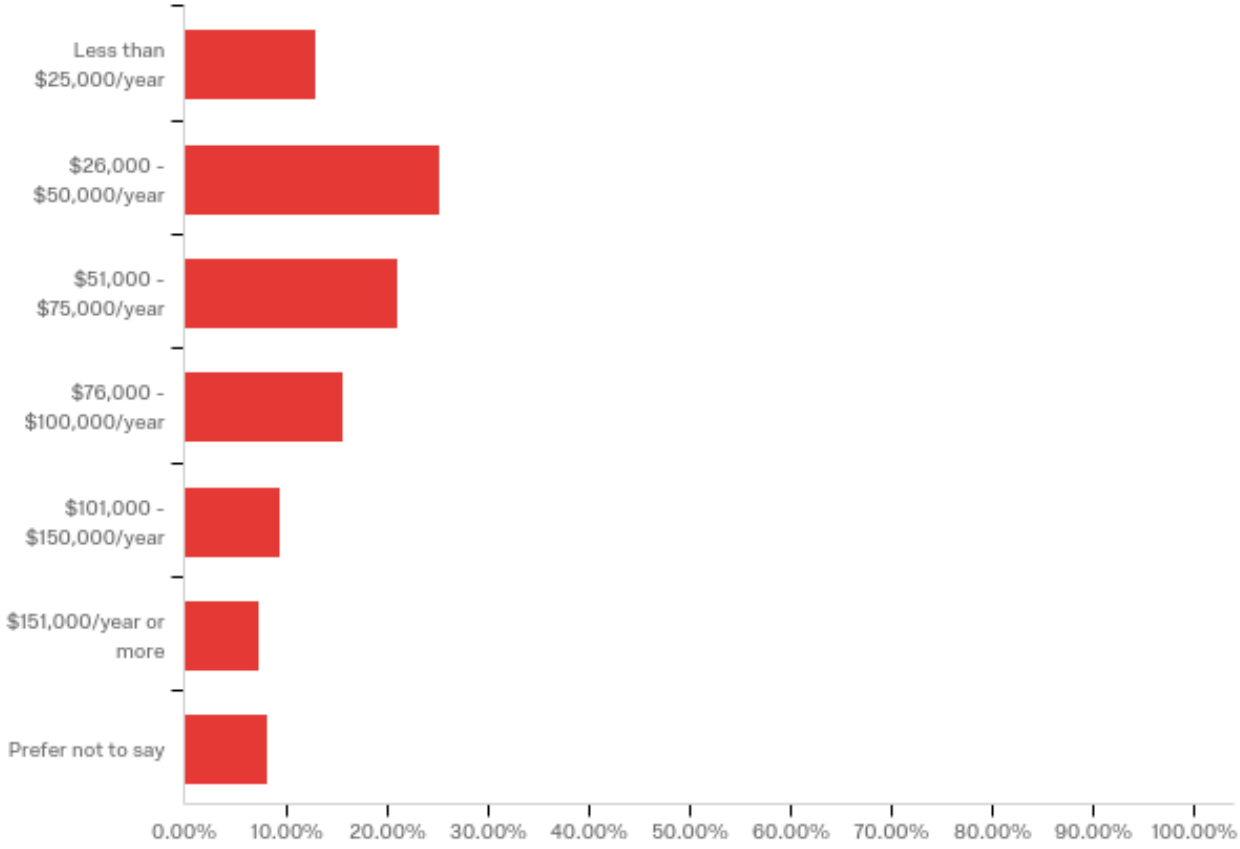
What is your highest level of education?



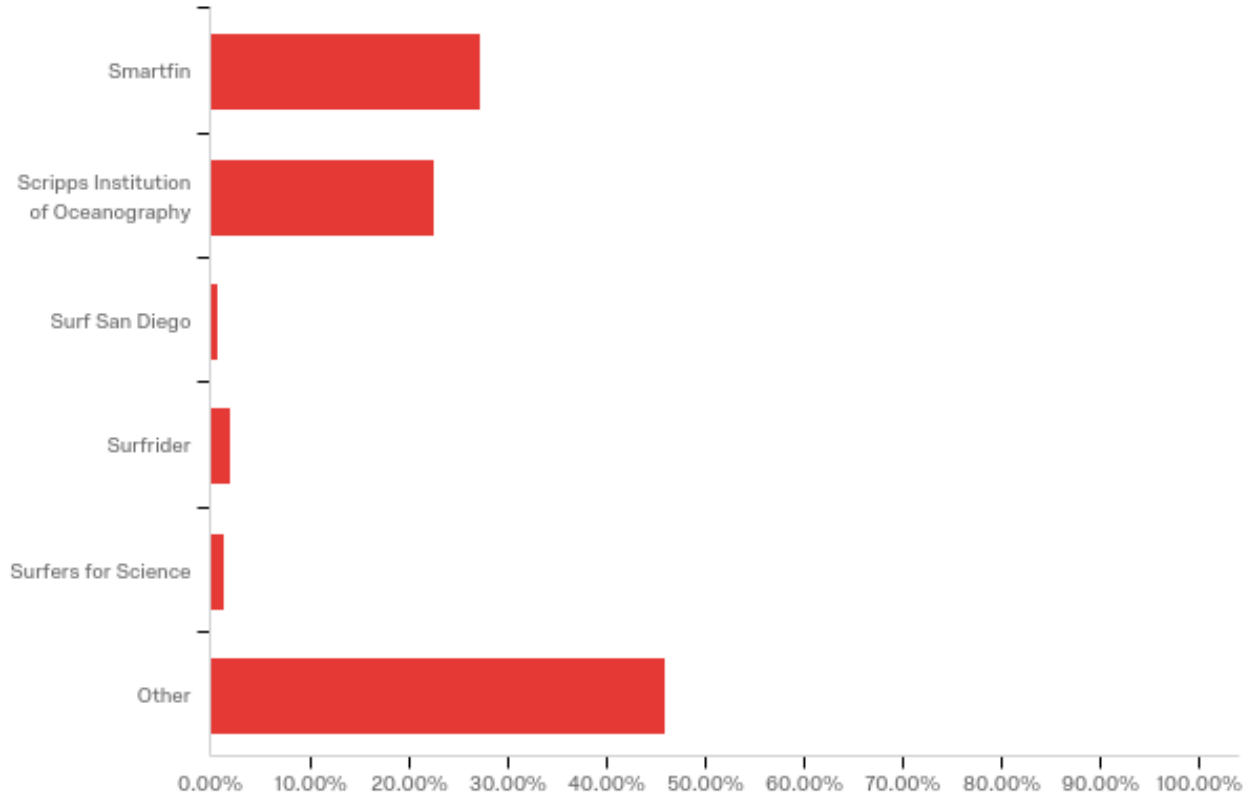
QID36_7_TEXT - Other

Other - Text
PhD
UCLA PhD student
FAA rated Commercial pilot
Abitur (German)

What is your annual income level?



Where did you hear about this survey?



Q44_5_TEXT - Other

Other - Text
Friend who is an SIO student posted in a group chat
Friend who's a part of it.
Facebook
My amazing girlfriend
Chimay Skinner
Instagram
Smartfin Instagram Page
A friend sent it to me as she knows I am always in water and interested in science
Colleague

Instagram

Sustain surf

Instagram

Futures Fins

Vanessa

Sustainsurf

Instagram

@sustainsurf's Instagram

Sustainable Surf

Sustainable Surf

Ig

Instagram

Instagram

Sustainable Surf instagram

Instagram

Epa

Family

Facebook

Chimay

Chimay skinner

Chimay

A friend, Ralph Pace

Friend

Facebook

Facebook

Fb

Friend posted on facebook.

Facebook advertisement on Vanessa`s page to participate in the survey!

Ralph

Friends

Megan McPhee

Friend

Friends; Micah and Melinda Spooner Wyman

Mel spooner

Friend

Talk at SIO

Friends Instagram account

Instagram

Friend

Ralph Pace

Vanessa :)

Social

Facebook

from Tyler Cyronak

Facebook

facebook

Twitter post

Facebook post from Smartfin

Smartfin's twitter

Phil Bresnahan

Comments/feedback/additional thoughts

Comments/feedback/additional thoughts
I'm A surfer in Wilmington, NC and have my MS in Geoscience from UNCW, I'm literally a surfing scientist and want to help in any way I can with Smartfin. I'm currently a geologist for a coastal engineering firm here in Wilmington and do coastal sediment analysis and seafloor mapping up and down the East coast.
Seems awesome! Please email me if it's ready for purchase. tor@andersons.us
I would be stoked to help with this. I would need a specific singleton that I can share between my log and glider, use those daily this time of year, then Bonzer center fun come fall.
Make smart fin into a product to collect more oven data!
Good job Vanessa!
.
India being a country with very little data on local ocean conditions, it would be an honor to help smartfin track data for future ocean related research work.
:)
How can i get smartfins and start contributing in Australia? I live in Newcastle and want to be a part of this project
Keep up the awesome work!
I loved using my smart fin until it exploded. No one ever got back to me about it so I had to stop using it. It was a really cool feeling gathering information while surfing. Some days I didn't want to paddle out but I thought about the fins and went out anyways so I could get data.
Your survey question about trying out new tech could be rephrased, there's a large variability between "sometimes trying out new tech" & "first to try" consider something in between those two resposes.
Hi, I think this technology is fascinating and am keen to be involved. If you need it trialed in UK am happy to talk further also I create videos and photos have an in water housing which use. If you need promotional material would love to talk further. My website is www.clarejamesphotography.com good luck with collecting all the data. I look forward to hearing from you. Clare

Worked for VA surfrider chapter lasted year and we were very interested in getting smartfins in the water and on multiple boards for people to surf on a weekly basis. Delays from Smartfin for what is now 2.5 years has caused many to lose interest. It caused me to focus on just beach cleanups and plastic pollution initiatives for the Surfrider chapter instead of doing smartfin program. Now I am working at NOAA for NCCOS and no longer can volunteer for the VA surfrider chapter. I still am highly interested in using a smartfin when I surf, kitesurf, or paddleboard but I have only used it once at a surfrider event since learning about smartfin in 2012

I'm excited for your project. I wish you the best of luck in your endeavour and in finding the right people to help you achieve your goal! Hopefully I can play a part in your quest!

Please contact nihoneiga@ucla.edu

Nope

I'M curious about the data that is being colected anda the range that you plan

This is an amazing idea and a great way to gain critical ocean info!

👍🏼

Cool idea!

This sounds like a really cool and interesting program that could really shed some light on things we don't yet know about coastal waters!! As a surfer of over 10 years, I am very excited to have the chance to be a part of this program. I surf in the oceans as well as the Great Lakes so I could possibly be helping explore a different avenue of this program than the average surfer.

Would love to see this tech and more interest in this sort of research in Southwest Australia

N

Does the smart fin detect pollution

I'm a graduate student at UH studying oceanography. My lab builds low-cost sensors and instruments. I love your project idea and hope it succeeds! I'm curious about the sensors you use and their precision while moving through the water so rapidly when surfing. I'll shoot you an email. Smahaffe@hawaii.edu.

None

No

Love it! Let's put this on the @wefoil for sure. I would be down to rep this with my products. Abraham Shouse 808 443-7823

Make twin/keel fin, allow the product to go in retail.

Keep up the brilliant work!

I am a doctoral student from Finland and I surf in the Baltic Sea, which is one of the most polluted seas. I would like to start using smartfin to collect data to help people and companies to understand the need for action. If you need a contact person from Finland/Scandinavia you can contact me: toni.luomaranta@gmail.com

This is awesome, keep up the work and don't stop developing!

It sounds cool, I like the idea of collecting data for science and personal data about a surf session.

Could this fin be used to check water quality? Especially after it rains?

Thx for this cool project. Good luck! I need a fin for my longboard! Would love to support you

Very cool idea!

I am not an avid surfer. I have taken a couple of lessons before and surfing is an activity I am enjoy and would like to take more lessons to become better at doing! I would enjoy surfing with the smartfin and contributing to citizen science if I was a regular, avid surfer!

None

Being able to make measurements on oceanic conditions (given that they're perpetually changing) is inter grail to science and the scientific community. I truly hope this project can go forward!

I'd be stoked to help out for a greater cause and for the love of the ocean!

None

Thanks for working on something that will help us understand our future!

None

One of these days, I'm going to get a smartfin to test!!!

I mentioned that I don't use technical gadgets, but this is more due to cost savings than lack of interest in technology.

na

Cool project!

None

Poorly designed survey, questions vague/unnecessary likert scales. Question regarding preference of sharing my surf spots with others, most surfers have secret spots they do not want to share

Today's symposium on sustainable surfing at sio was amazing! Great meeting you Phil. Thank you so much.

Great idea! Think people will definitely take notice and use it

Awesome work!! Are there smartfin groups out in Hawaii?

None

great job guys!

great idea! hope to see some smartfins in Australia soon

Quick painless surgery. Thanks

Wich parameters are studied?

Awesome survey - nice to see it up and running. Excited to hear what results you get.

Keep up the great work, our planet needs it!

Smartfin is a great program!

As a user of the smartfin app, it would be nice to be able to make sessions private (availble only to me) or public. I just like having some control over my location information (i.e. when I forget to turn the fin off and it tracks right back to my house...)

I would love to try this out in florida

Can't wait to see where this goes, would love to see real time bathymetry from the data

None

QID52_9_TEXT - Topics