

# Designing for Outdoor Engagement

# UX Validation Report

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SI 487 | April 9, 2020



**TOTAGO**

Turn Off the App **Go Outside**

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## Executive Summary

TOTAGO is an outdoor adventure application that currently lacks adequate functionality to track outdoor activity completion rates amongst users. To solve this, our team developed a tracking functionality to be implemented within TOTAGO's current user experience. Our project was uniquely restrained by the company's mission ("Turn Off the App, Get Outside"), requiring our solution to promote user engagement outside while also maintaining offline capabilities. The solution we developed is a retroactive logging feature that allows users to log and share their outdoor activity, in addition to a feature allowing users to create, view, and assess their outdoor goals. We developed this solution after reviewing survey data provided by the client and conducting user and non-user interviews to understand our user needs and desires which led us to craft specific design requirements to ensure the stakeholder needs were met. Furthermore, our solution underwent multiple design iterations; throughout our process, we received feedback from our client to simplify the solution to deliver an MVP. The final design we created meets the requirements specified through our research, adheres to our client's needs, and helps solve TOTAGO's problem of tracking its users' activity. In this report, we will go into further detail on our approach and solution as well as provide important background information on the project.

## Project Background & Goals

### Project Background

Our project is to create a design solution that tracks activity completion rates to see if users are actually getting outside and completing activities. As of now, TOTAGO offers users a variety of outdoor adventures, transit options and trail paths. However, their application currently lacks adequate functionality to track hike completion rates amongst users. Our goal is to implement a design solution that tracks completion rates in a way that does not contradict TOTAGO's mission to get people off their devices and appreciate the outdoors.

Currently, TOTAGO uses multiple data-tracking methods to assess completion rates. MixPanel is used for funnel tracking and counting the number of clicks on links and buttons. Funnel tracking is the number of steps a user takes while viewing certain activities. TOTAGO views the greater number of steps in the funnel as an indicator of

completion. Additionally, TOTAGO views the “plan trip,” “go,” “save,” and “download” buttons as indicators of completion. We found these methods cannot be concrete indicators of completion because there are many use situations where users do not complete the intended activity. Additionally, TOTAGO has no user research data that could outline or justify these habits as markers of completion. TOTAGO is implementing its software onto white-label partners’ interface which creates a variation in user experience across a network of apps. Therefore, TOTAGO may not always be able to track completion rates and inform white-label partners on the effectiveness of their service.

## **Project Goals**

In taking into account the stakeholder requirements, as specified by our client, we have produced the following overarching goals for our project:

- 1. Balance the app’s functionality while supporting the company’s mission of turning off the app.**

TOTAGO, otherwise known as “Turn Off the App, Go Outside,” promotes disengaging from technology in order to engage further with the outdoors. Our client communicated a clear desire for a design solution that minimizes user activity within the actual application, instead prompting users to explore outdoor recreation. Our job is to balance designing a functional solution with high utility and the organization's motivation to get its users off the app.

- 2. Develop a function for TOTAGO to track user completion rates across all platforms and experiences.**

In order to appeal to white labels and business partners, TOTAGO tracks data to prove user engagement. However, there is a lack of clarity regarding if users are actually engaging in the activities they view on TOTAGO’s platform. Having this data would give insight into TOTAGO’s success of getting their users outside and off their phones to support public transit and local parks. Additionally, this data would support TOTAGO’s business plan of allowing destinations of interest to promote themselves through the app.

- 3. Improve the accuracy of TOTAGO’s data tracking.**

For this project, we’d like to improve TOTAGO’s data tracking by implementing a feature that will allow TOTAGO to track or gather data on whether or not users are completing the hikes they plan within the app. Currently, TOTAGO

has no way of answering this question, and is forced to make assumptions based on user behaviors they predict indicate completion of the planned outdoor activity within the app. This solution would help them obtain more accurate data.

#### **4. Create an accurate profile of TOTAGO's users.**

To design a solution for TOTAGO users, we must first gain an accurate and comprehensive understanding of who the TOTAGO user is. Through our research, we hope to capture users' attitudes, behaviors, experiences, and emotions with regard to their use of the TOTAGO application. In acquiring such a user profile, we will be able to tailor our design solution to the user's needs and create relevant, guiding UX requirements to ensure we are designing for the end user.

#### **5. Improve TOTAGO's understanding of user habits and behaviors.**

One of the main concerns of the client is their limited knowledge regarding how users utilize their product to actually complete hikes. We have been tasked with designing a solution that captures data that can inform our client of users' end behaviors. Through designing a tracking solution, we hope to increase our client's comprehension of their users' journeys, from start to finish, within the TOTAGO application.

## **Research Methodology**

### **Research Questions**

The culmination of both the project goals and research goals was instrumental in setting the foundation of our project. Our research questions served as the guiding principle for our overall efforts in uncovering the user needs and UX requirements necessary for our project:

#### **1. How do current and potential users feel about the integration of technology into their outdoor experiences?**

Answering this question helped us to understand how we can implement a tracking solution that aligns with users' and potential users' current lifestyle and attitudes towards integrating technology into their outdoor experiences.

Additionally, it uncovered ways subjects are already integrating technology into that space.

## **2. How are TOTAGO users currently tracking their completed outdoor experiences via the application, if at all?**

Here, we wanted to identify users' desire for activity tracking and potential pain points that may come about while tracking activities. Understanding these needs helped us develop a method for tracking that is best suited for current users' habits while ensuring TOTAGO's interface remains noninvasive with added benefits.

## **3. What value do users derive from tracking their activity within the application?**

Answering this question provided insight into the attitudes users hold toward activity tracking, as well as the value users place upon that specific functionality. Our client emphasized the importance of uncovering these attitudes, as they helped inform the decision of whether the implementation of tracking functionality within the TOTAGO application is beneficial to the organization's goals.

# **Methodologies**

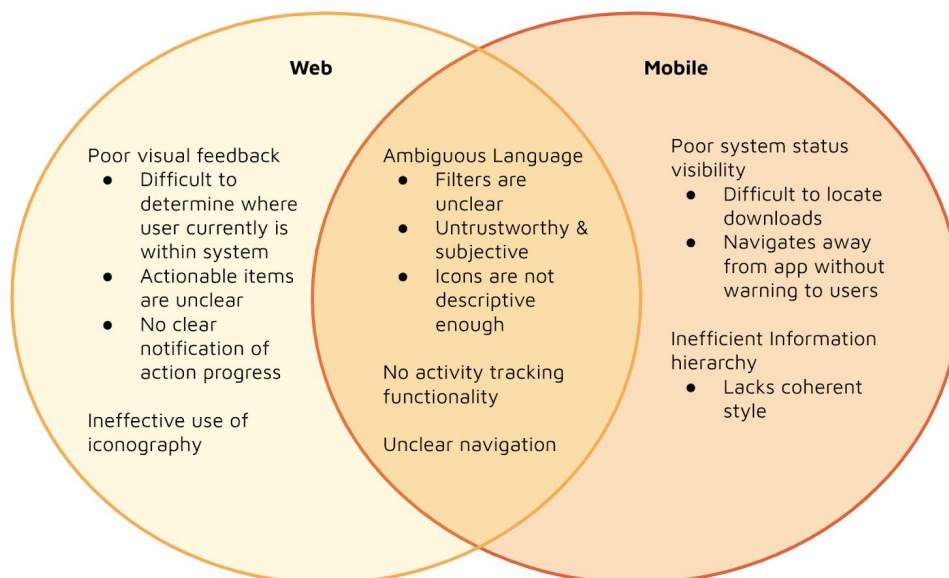
## **I. Competitive Analysis**

Our research began during the Fall semester, as we conducted a competitive analysis that helped us better understand TOTAGO's main competitors, providing insight into the space TOTAGO serves. The competitive analysis aimed to answer our research questions regarding how users currently track and integrate technology into their outdoor experiences. Although we are ultimately interested in how *TOTAGO users* accomplish this task, by thoroughly examining features of competitors' applications, we gained knowledge about the greater user base -- outdoor adventurers -- as a whole. We conducted a standard feature analysis, comparing TOTAGO against seven of its direct and indirect competitors, across twenty-eight assessment criterias and feature categories (see Appendix). The competitors featured in our analysis were specified by TOTAGO's CEO, Adrian Laurenzi. Our team created the comparison criteria; keeping in mind the project's focus on tracking outdoor engagement, we made sure to include features relevant to logging outdoor activity. Other notable assessment criteria included: social integration,

trail features -- such as ratings, photos, filters, weather conditions, and the ability to save or download a trail -- and internal vs. third-party transit directions. Analyzing TOTAGO's activity tracking methods against its competitors enabled us to largely accomplish our research goal of collecting data regarding how users interact with technology and smart devices for outdoor activities.

## II. Heuristic Evaluation

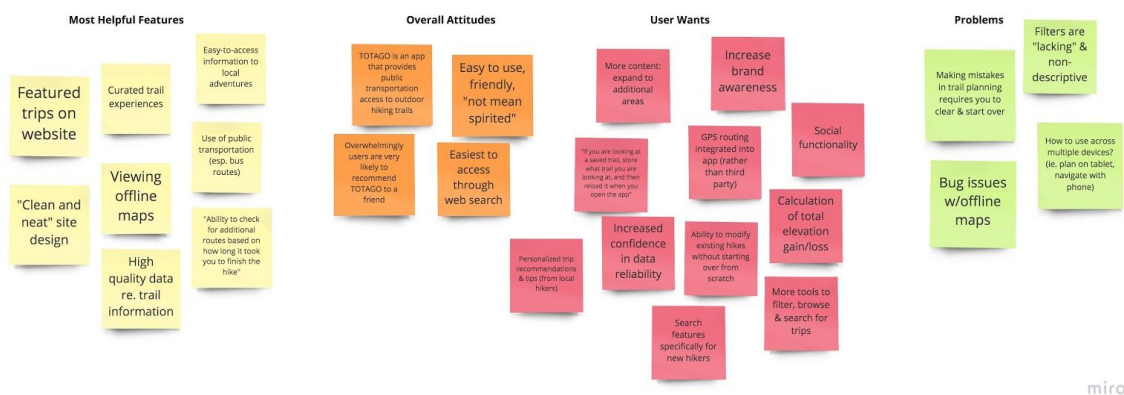
We performed a heuristic evaluation of the TOTAGO application. The first phase of the evaluation focused on the mobile application, while the second focused on the desktop site. Our heuristic evaluation encompasses the entire application and its functionality; however, we dedicated greater attention to evaluating TOTAGO's tracking functionality, in order to adhere to our project goals. We also specifically looked for consistency in standard, menu mapping, error prevention, and overall design to complete the heuristics evaluation. The evaluation enabled our team to identify problems and patterns within TOTAGO's application, as well as answer the research question: how are TOTAGO users currently tracking their completed outdoor experiences via the application, if at all? Using Nielsen's ten heuristics for user interface design, as well as additional heuristics generated to evaluate TOTAGO's existing tracking functionality, we measured the usability, utility, and aesthetic appeal of the current TOTAGO system design. We created a Venn Diagram to compare our web and mobile evaluations, and find similarities between the two analyses.



## Heuristic Evaluation Venn Diagram

### III. Survey Data

Next, we analyzed the information TOTAGO had already collected about its users using an affinity diagram. The client has made available to us survey data collected largely in 2016 (the survey questions have been included in the Appendix). There are five surveys and each one encompasses a specific aspect of the user experience. Pulling data and notable quotes from user feedback surveys, we decided to sort this information using an affinity diagram, in order to best identify patterns and general attitudes TOTAGO users have.



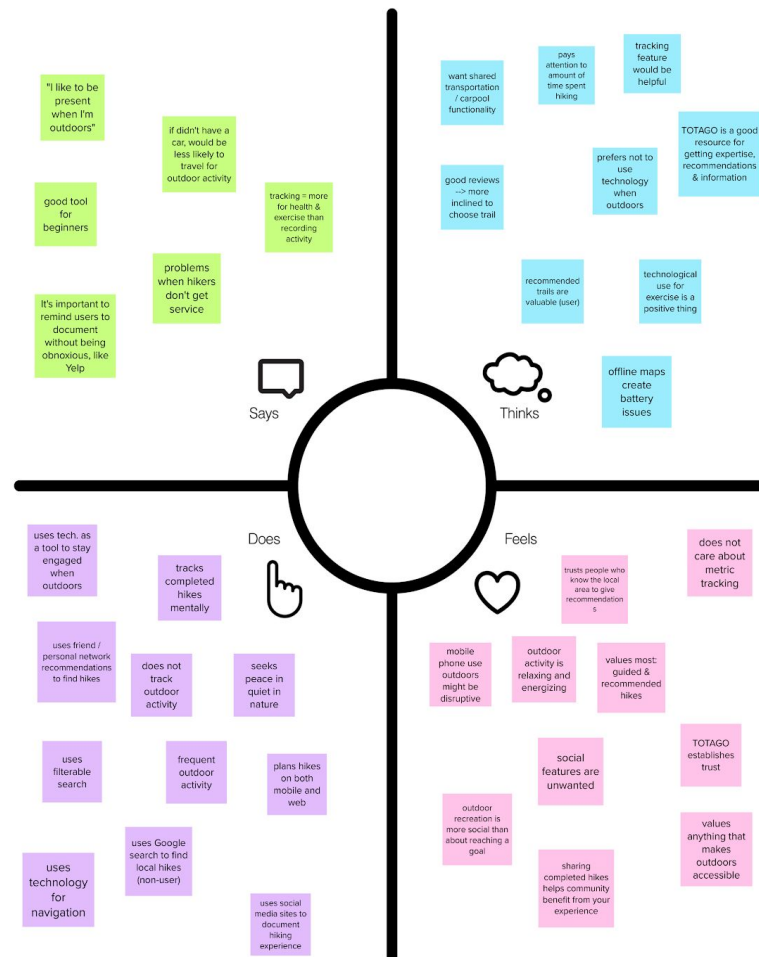
Survey Data Affinity Diagram

### IV. User Interviews

Conducting interviews with both current and potential users was potentially the most important phase of our research. We created two interview scripts -- for current and non-users -- aimed at answering our three central research questions. The current-user script seeks to accomplish two of our research goals: determine what users value most as part of the outdoor experience, and understand how users currently track their outdoor progress. Our recruitment strategy for current TOTAGO users involved reaching out to contacts provided to us by the client. On the other hand, the non-user script focuses more on determining attitudes held toward the integration of technology into outdoor experiences, as well as how users interact with technology and smart devices while participating in outdoor activities. We recruited non-users by reaching out to University of Michigan students in outdoor activities clubs, such as the Outdoor Club at Ross and the Michigan Backpacking Club, as well as MeetUp groups within the larger Ann Arbor community. We leveraged monetary incentives in an effort to encourage



interview participation, motivating potential respondents with the opportunity to win a \$15 Amazon gift card. To approach and analyze the data gathered from our interviews, we used an empathy map to help us identify common feelings/themes amongst users.



*User & Non-User Interviews Empathy Map*

## Key Results

### I. TOTAGO's Most Valued Features

Our research identified TOTAGO's strongest features, as valued by users. These features include: offline access to trail information, curated trail experiences, detailed mappings of trailheads, and public transportation information. These features are unique to TOTAGO's interface, set TOTAGO apart from its competitors, and encourage returning users. Therefore, it is

important moving forward to consider these features as user requirements, so our design solution supports and does not interfere with their functionality.

#### A. Offline Access to trail information

In the Early Adopters Feedback Survey (2016), 100 percent of participants noted this feature was their favorite part of the app. This pattern repeated itself in the React Native App Feedback - TOTAGO and Partner Apps Survey, as well. Furthermore, Participant 3 of the User Interviews explained access to offline trails was one of the leading reasons why they downloaded TOTAGO. Only 50 percent of TOTAGO's competitors offer access to offline maps.

#### B. Curated Trail Experiences

Two out of the three TOTAGO users we interviewed favorably mentioned the curated trail experiences. Participant 1 appreciated that recommended trails were evaluated according to fitness levels and expectations, offering a "personality profile" of the hiker. Participant 2 mentioned the importance of recommended or curated hikes. They believe as a beginner it can be difficult to understand what type of hikes are a good fit for everyone.

#### C. Access to Public Transit

One-hundred percent of respondents to the *User Feedback Survey (2016)* described TOTAGO in some way related to their public transportation navigation feature. Similarly, respondents found information regarding public transportation "easily accessible." Our user interviews echoed such attitudes; Participant 3 noted appreciation for TOTAGO's route planning option that incorporates their local public transportation system and expressed desire to utilize that specific functionality.

## II. Use and interest in social features

The mention of social features came up frequently throughout our research. Social functionality within and outside of the TOTAGO application were used by participants as a way to document hikes and trail information. Both TOTAGO users and non-users discussed their use of social functionality when planning outdoor activities. Participant 2, a TOTAGO user, noted that "many people in the area like to meet up with fellow hikers," and use outdoor-oriented applications such as TOTAGO to do so. Beyond the TOTAGO app, both Participant 3, a user, and Participant 4, a non-user, primarily rely on

their social networks to generate recommendations for outdoor experiences. Furthermore, participants relied on social sharing to provide information to their local hiking communities. With functionality like check-ins, reviews, and photo sharing, respondents felt positively about using social functionality to contribute to or “strengthen their communities.”


### **III. User attitudes toward activity tracking**

The user attitudes we uncovered regarding the idea of tracking one’s outdoor activity were mixed, but provided valuable insight for our overall project goal. We found that, of the TOTAGO users interviewed, one-hundred percent do not currently track their activity, and demonstrated an overall lack of interest in functionality like activity logging. However, we identified attitudes of willingness to engage in tracking within the app. For example, Participant 1 regards the feature as “helpful to a community,” and realizes the potential to benefit from both sharing their own experiences, as well as gaining exposure to that of their community. Furthermore, Participant 1 feels that “TOTAGO does a good job of establishing trust,” and that this fact could influence a change in their attitude toward activity tracking.

Across our non-user interviews, we found that participants hold a desire to obtain hiking metrics that tracking would provide, but do not currently engage in tracking themselves. Participant 4 expressed interest in tracking when working towards the goal of losing weight, in order to obtain accurate feedback regarding their activity. However, when engaging in outdoor activity recreationally, we found non-users to be overall disinterested in tracking their experiences and reluctant to participate in tracking behaviors.

## User Personas

### Primary Persona



Andrew Levere

#### Goals

- + To track his past hikes and related metrics in order to improve his ability to set future hiking goals
- + Find suggestions for hikes that are within his typical difficulty range and align with his fitness goals

#### Motivations

- + Get outside to take a break from the world and the pressures of being constantly connected
- + Live responsibly and ecologically-friendly

#### Frustrations

- + Finds it difficult to track his hikes without draining his battery
- + Wants to avoid social media but still be able to easily share his hiking experiences with other hikers who are interested


34 years old  
Boulder, Colorado  
Expertise: Advanced

Our primary persona is an advanced hiker who desires to improve his hiking skills, rather than get assistance in navigating outdoor activities.

- His first goal of tracking his past hikes and associated data is supported by users' desires to receive their calculated mileage and total elevation, as cited in our survey data affinity diagram.
- We found, through our interviews, that users overwhelmingly value the curated trail recommendations TOTAGO makes; therefore, his second main goal is to receive such suggestions according to his typical difficulty range.
- His motivations echo attitudes users expressed in user surveys, as demonstrated in our affinity diagram: mainly, appreciation for TOTAGO's emphasis on public transportation and turning off the app to get outside.
- His frustrations draw from the pain points we identified through our user interviews. First, multiple users expressed that their desire to obtain hiking metrics mobily was often obscured by limitations regarding their device's battery life. Next, amongst interviewees who did not feel favorably about social media, we found a desire to still be able to share experiences with friends, family, and other hikers.

## Secondary Personas

### I. Secondary Persona 1



Stacy Vu

21 years old  
Los Angeles, CA  
Expertise: Unfamiliar

#### Goals

- + Plan an outdoor activity for an upcoming trip to Ann Arbor
- + Find the best local hiking spots and explore a new city
- + Meet other hikers on her adventure

#### Motivations

- + Explore the outdoors throughout her travels across the country


#### Frustrations

- + Lacks knowledge of Ann Arbor and its outdoor opportunities
- + Difficult to get to hikes in unfamiliar areas without an understanding of public transportation

Our first secondary persona is a visiting hiker, unfamiliar with the local outdoor opportunities but eager to engage in outdoor recreation in a new city. This classification was emphasized by our client as an important edge case to consider.

- Her goal of accessing local outdoor opportunities reflects desires expressed by multiple interview participants to utilize outdoor recreation as a method of connecting and engaging with their local communities.
- Furthermore, her goals and motivations are also supported by attitudes we uncovered amongst our non-user interviewees, such as a desire to find new outdoor activities within their local areas.
- Her frustrations are drawn from pain points we identified within our interviews and survey data analysis. Users and non-users cited difficulties accessing trail heads without an understanding of public transportation, if driving was not an available option. Furthermore, we found throughout our interviews that one of the main impediments preventing users and non-users from exploring outdoor opportunities was a lack of knowledge of the local landscape.

## II. Secondary Persona 2



Bethany Smith

55 years old  
Vancouver, WA  
Expertise: Beginner

### Goals

- + Plan an outdoor activity to engage in with friends and family
- + Find suggestions for outdoor opportunities that will align with her level of experience and desired difficulty

### Motivations

- + Become an advanced hiker and be able to plan hiking trips independently

### Frustrations

- + Difficult to share hiking and other outdoor activity information with her family
- + Feels uncomfortable with planning an outdoor recreational activity on her own

Our second secondary persona is a beginner hiker that prefers to stay within her local area. Because of her beginner status, she may utilize the app to navigate in addition to planning and sharing her hikes.

- Her first goal, and first pain point, echo user desires expressed throughout our research for the addition of a social integration into the TOTAGO app to enable sharing of trail information with users' personal networks.
- Her motivation to advance her hiking skill and plan hikes independently reflect a common user desire, found across our survey data analysis and interviews, to use outdoor recreation planning tools like TOTAGO to enhance users' ability and confidence with engaging with outdoor recreation.
- Her first pain point echoes frustrations both users and non-users expressed in interviews with difficulty sharing hiking experiences and information with their close personal networks.
- Her second pain point is a key user attitude identified by our client as typical of beginner users. Our research concurred, as many users cited utilization of planning tools like TOTAGO to compensate for their discomfort with or lack of confidence in planning hiking activities on their own.

## UX Requirements

Our research throughout this phase has enabled us to zero in on a set of succinct, yet comprehensive requirements for our design solution. We have organized our UX requirements into three priority levels.

### I. Priority I

***Our design solution must enable activity tracking without requiring active technological use throughout the activity.*** This requirement was found to be important through our survey and interview research. Users and non users both mentioned the importance of needing offline capabilities within outdoor recreation apps and this was echoed through our survey analysis. This is important to both our advanced and beginner personas.

***Our tracking functionality should be designed to guide accurate user self-reporting.*** This is a client requirement in addition to being a requirement based on our user research. The client needs accurate information, and the user must also be supplied accurate information. Especially for advanced hikers who would rely on this information in order to improve their skills.

***Our design solution should enable users to easily document and review their past activity.*** Similar to the aforementioned requirement, this requirement should allow users to be able to easily document and review their past activity. Because, through our research, users mentioned a desire to see statistics related to their hikes / outdoor activities our solution needs to include those desires and also make it seamless for users.

### II. Priority II

***Our design solution should promote user control & should not require user activity tracking if users wish to abstain.*** This is a client requirement that is meant to promote user control and align with the organizational values of getting off the app. Additionally, through our survey analysis and interviews, we discovered beginner hikers are less interested in tracking activity. Therefore, users should not be required to track activity.

***Our design solution should allow users to leverage their social network through the app.*** This requirement stems from primarily our interviews and survey data analysis. We have decided to include a social component because

users have expressed that they typically find hikes and try new outdoor activities based on their network. In order to support this, we believe users should be able to leverage their social network.

### III. Priority III

***Our tracking functionality must be able to be implemented across the mobile and web apps.*** Through primarily our user interviews, we realized that people typically plan or search for outdoor activities using web apps, and when they navigate or track hikes, they will utilize a mobile app. Therefore, TOTAGO's application must be able to cross platforms seamlessly.

***Our tracking solution must maintain functionality when users are offline.*** Our research findings indicated that offline map capabilities, as well as access to databases on trail information, are features that complement the overall user experience. Since internet connectivity may be limited in trails, this is an important implementation requirement as it is in line with TOTAGO's broader goals of facilitating outdoor activities.

## UX Design Process

### Overview

Our team underwent three major design iterations over the course of the design phase. Initially, we brainstormed the features and functionality we wanted to include in our design; mainly, an activity tracking interface that enabled users to log specific outdoor experiences. We began designing by creating a low-fidelity prototype, which we used to conduct usability tests with users, as well as receive feedback from our client. After this primary round of validating our designs, we collaborated to create our final, high-fidelity prototype.

### Early Ideas, Sketches & Wireframes

Our first iteration of design ideas centered around the implementation of two main functionalities: an activity log and tracking interface, and a social feed. We sought to create an interface that enables users to retroactively log their outdoor activity after its completion, and publish entries to a centralized TOTAGO social feed. The tracking



functionality would consist of a User Self-Report screen, an Individual Entry Metrics page, an Activity Log, and an Activity Overview.

The User Self-Report interface (Figure 1) prompted users to manually enter trail information, such as the trail name, distance traveled, duration of activity, and difficulty, as well as personal photos and notes. To aid users in self-reporting, we had the idea to create a “Map Tracker,” a tool that allowed users to calculate their distance traveled by highlighting specific segments of a trail on the trail map (Figure 2). Similarly, we wanted to implement the same functionality with a “Note Tracker,” enabling users to leave comments specific to individual points on a trail (Figure 3).

LOG ACTIVITY

Trail

+ Add New Trail

Distance  ^  
v miles v

MAP TRACKER

Duration  ^  
v minutes v

Date

< February 2020 >

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Difficulty

Very EasyImpossible

Photos

Notes

ADD NOTES TO MAP

Share

TOTAGO Feed

Twitter

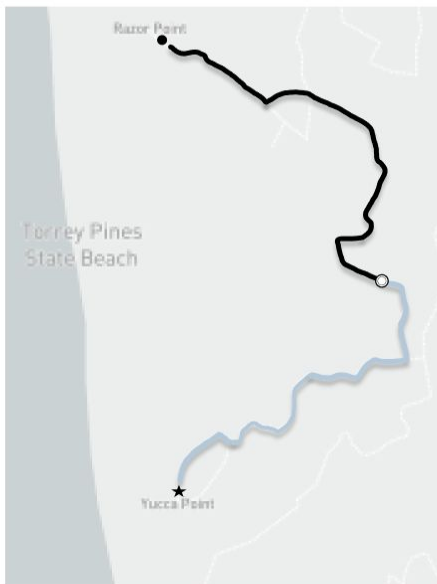
Facebook

SAVE ACTIVITY

**Figure 1: User Self-Reporting Interface**

## MAP TRACKER

Tap to pick your start point.  
Drag the icon or tap your endpoint to  
calculate your total distance traveled.



— Trail Route — Distance Traveled  
Route Distance: 12 miles

COMPLETED 20.00 miles ▾

Is this an Out-and-Back hike?

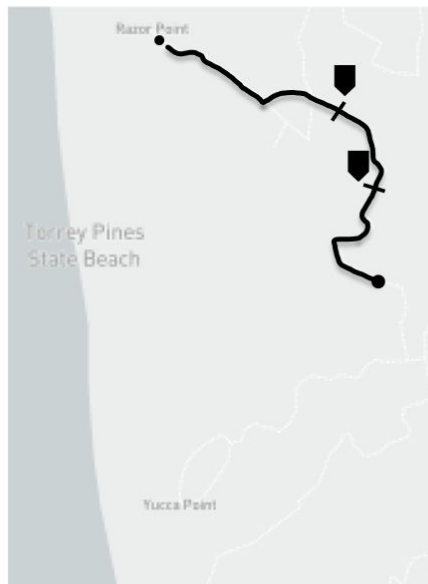
Yes  No

Done



**Figure 2: Map Tracker**

## NOTE TRACKER

Tap to add comments along the trail.



Notes:

-  Trail Note at 3.80 miles  
"This was a difficult hill!"
-  Trail Note at 7.87 miles  
"Saw a rattlesnake!"

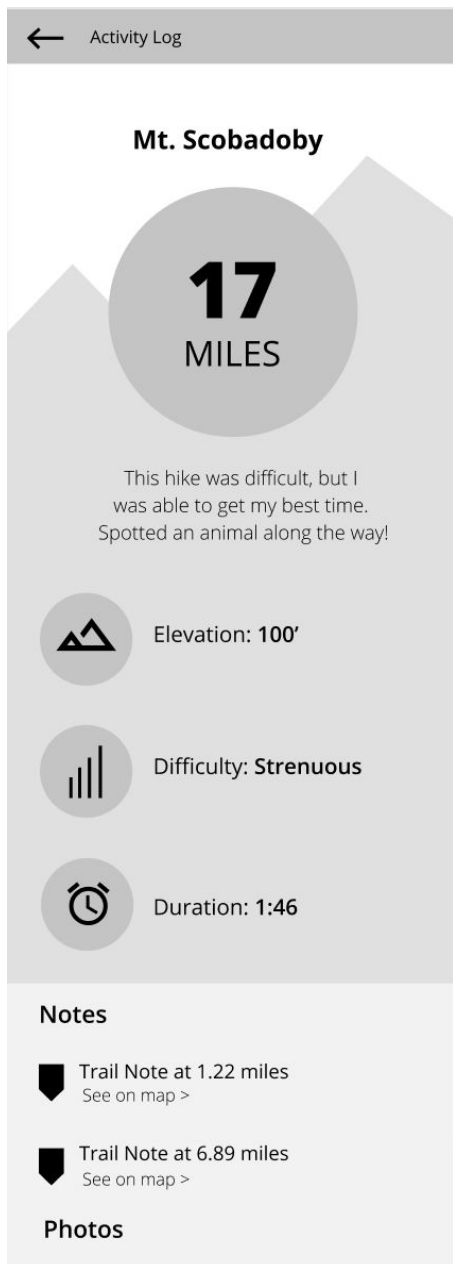
Done

**Figure 3: Note Tracker**

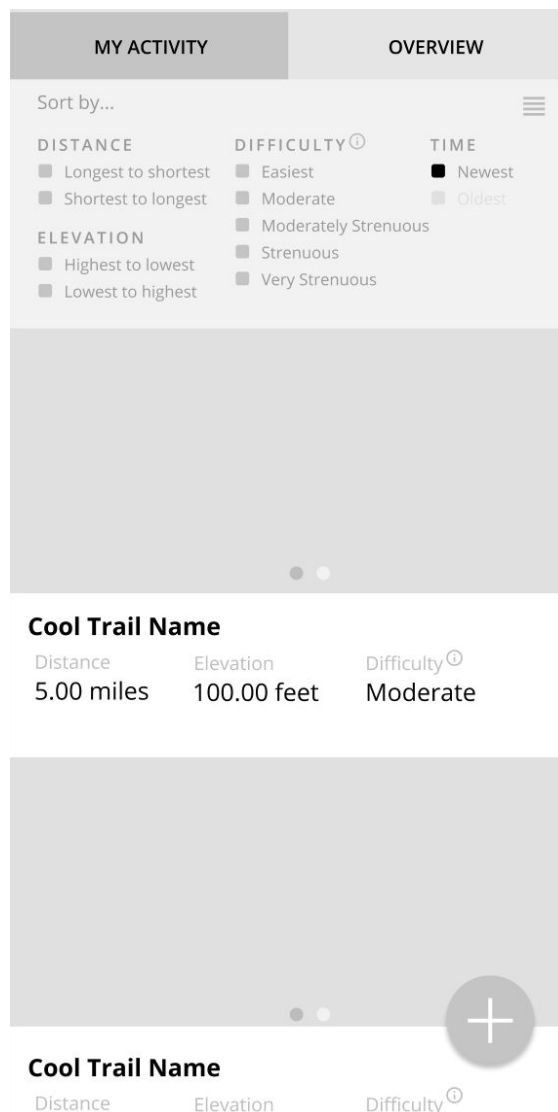
Upon the completion of the User Self-Reporting interface, an Individual Entry Metrics screen would be displayed (Figure 4). This page would summarize the activity information, and would be saved as an entry within the user's Activity Log.

The Activity Log enables users to track their completed activities in one centralized location (Figure 5). The Log interface would display each activity entry, featuring a photo, trail name, distance, elevation, and difficulty. To access the entirety of the log entry information, users could click an entry and navigate to its Individual Entry

Metrics page. The Activity Log can be filtered by distance, elevation, difficulty, and date of entry, allowing users to easily sort and access their completed activities.



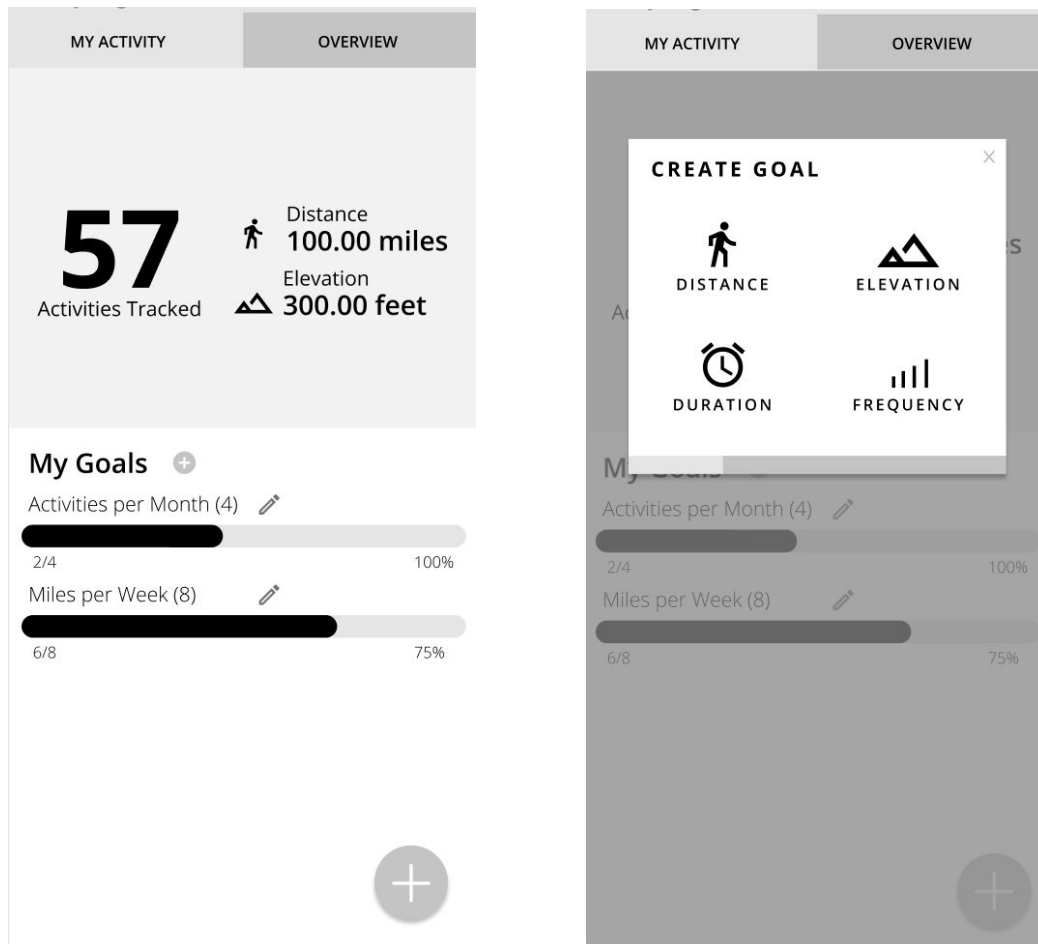
**Figure 4: Individual Entry Metrics**



**Figure 5: Activity Log**

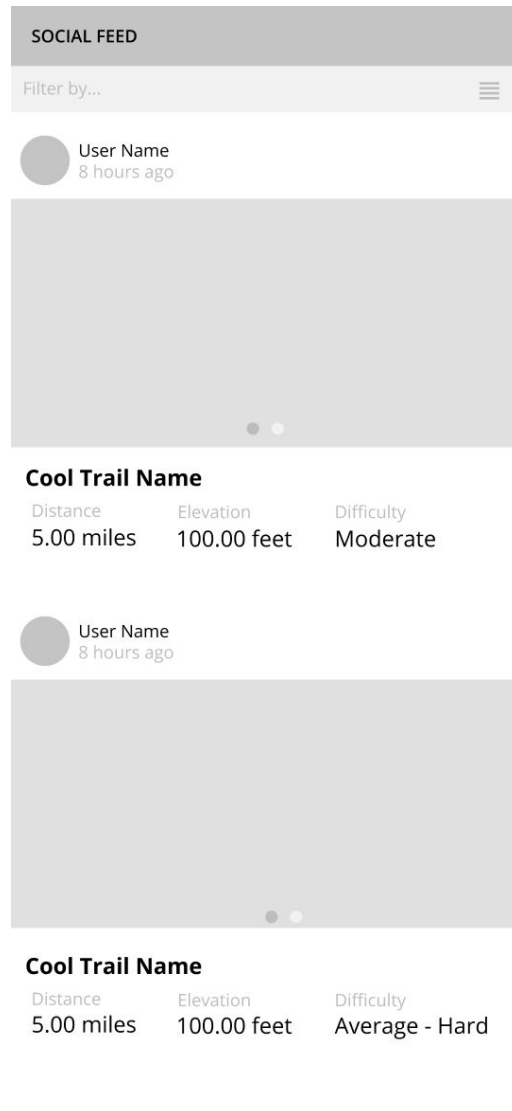
The activity tracking solution would also feature an Activity Overview page, summarizing the activity logged within the app (Figure 6). The Overview would offer

users holistic metrics regarding their outdoor recreation, as well as enable users to set goals for completed distance, duration, elevation, and frequency.



**Figure 6: Activity Overview**

Lastly, we had the idea to create a social feed to be implemented within the TOTAGO application (Figure 7). Using the same design as the Activity Log, the social feed would enable users to share their logged activities with other TOTAGO users. Users would simply toggle-on the “TOTAGO Feed” option under the “Share” subsection of the User Self-Reporting interface, and their log entry would be published.



**Figure 7: Social Feed**

## User Testing Insights

After we created lo-fi sketches based on our design ideas, we decided to conduct usability testing in order to gain feedback for our next iteration. We created a user testing task list that asked participants to complete basic actions using our prototype, such as navigate to the Activity Log, log an activity, utilize the “Map Tracker,” and so on. Each member of our team recruited one subject for our initial tests, resulting in four datasets from which we found common trends.

A majority of the participants we tested noted some level of confusion when distinguishing between the “My Activity” and “Overview” pages within the Activity Log, and determining which page they were currently on. The existence of the “+”

button to log an activity on both screens also contributed to this ambiguity. Furthermore, users were confused by the Map and Note Trackers, citing a lack of clarity regarding their purpose and functionality. On the other hand, users overwhelmingly found our central navigation easy to use and understand.

## **Client Feedback**

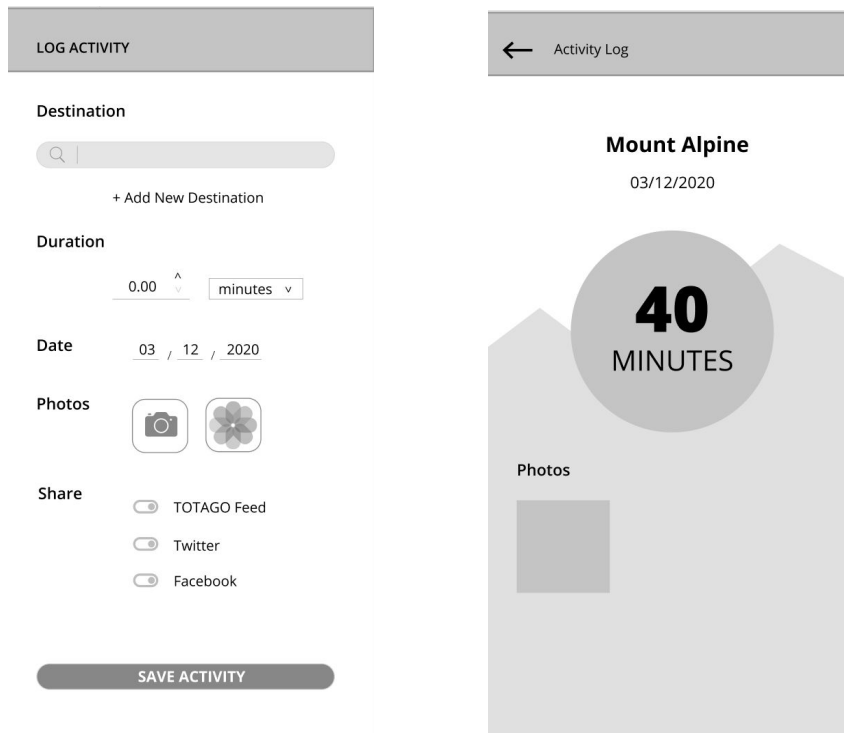
The feedback we received from our client on our low-fidelity sketches monumentally changed the direction of our design process. Adrian, our client, was impressed by the extent to which our ideas were well-thought out, but requested a simplified MVP design. Due to limitations on his end regarding their back-end capabilities, he wanted to steer away from a solution that would involve processing loads of data. Furthermore, Adrian requested we broaden the scope of our design from solely trails and hiking to any type of outdoor activity. He especially liked the design of the User Self-Reporting log, and wanted to maintain elements such as adding photos and toggling controls to share entries on social media.

In regard to the implementation of a social feed within the TOTAGO application, Adrian asked our team to put a pin in developing that aspect of the solution. While he liked the idea and vocalized a desire to explore its implementation with the TOTAGO team, he preferred to prioritize the tracking solution for our team's efforts and time.

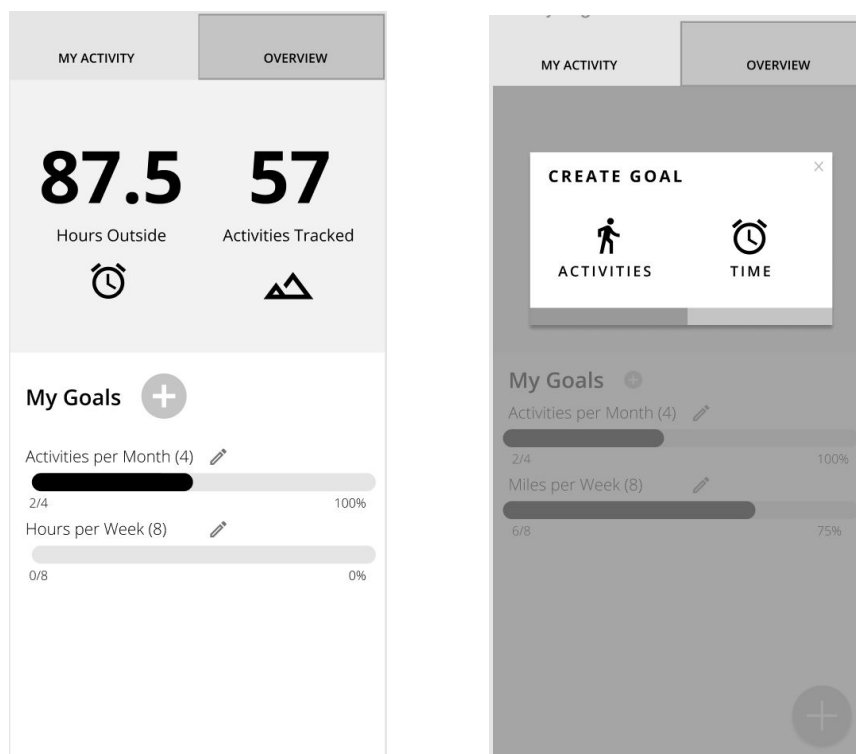
## **Intermediate Designs**

After receiving valuable feedback from both users and our client, our team underwent another round of low-fidelity design iteration. While most of our original design concepts remained consistent, we streamlined and simplified our design scope and functionality with regard to the User Self-Reporting interface, Individual Entry Metrics screens, and goal-setting within the Activity Overview page (Figures 8 & 9).

To increase the simplicity of tracking and goal setting, we decided to focus on duration outside as the primary metric, with the number of activities completed as a secondary option. Using language like "destination" rather than "trail name," and removing trail-specific metrics like "elevation," we widened the scope of our solution to encompass all trackable outdoor activity. Furthermore, we removed the Map and Notes Tracker from our solution, as they were too trail-specific.



**Figure 8: Simplified User Self-Reporting Interface (left) and Individual Entry Metrics (right)**



**Figure 9: Simplified Activity Overview (left) and goal-setting interface (right)**

# Validation Study

## Study Design & Methodology

### I. Research Questions

Our validation study was designed to give insight into the following research questions:

1. How does the perceived usability of the activity logging process differ when adding a new destination *outside* of the TOTAGO database?
2. What do users think is the primary purpose of the activity logging tool?
3. Is there value in offering users multiple options, in terms of privacy, for sharing activity log reports with the TOTAGO network?
4. How do users want to think about timing/duration when logging an activity?

### II. Study Approach

Our team conducted online, remote A/B testing, accompanied by a post-test survey, to validate our design decisions and receive user feedback in our interactive prototype. To answer our first research question, we decided an A/B test would best enable us to compare the overall usability of our design when adding a new destination vs. searching for an existing destination. In both versions A and B, we measured task completion time, test completion time, task completion, success/error rate (number of incorrect clicks), and post-task ease, as rated on a scale from one to five, ranging from Very Easy to Very Difficult. These metrics allowed us to determine the perceived usability of each version, in both quantitative and qualitative terms.

Our team also conducted a post-test survey, in order to receive more informative qualitative feedback. Our survey utilized a combination of System Usability Scale (SUS) questions, comprehension questions, perceived usability questions, and preference test questions. By including a variety of question types in our survey, we were able to address each of our research questions. For example, our comprehension questions aimed to understand how users viewed the primary purpose of our activity tracking tool, while our preference test questions enabled us to gain insight into users' preferred method of measuring time outdoors.



### III. Procedures and Materials

We conducted our A/B test using Google Hangouts, asking participants to screen-share with us such that we could observe their interaction with our prototype. We read participants the task list corresponding to the prototype version they were using (A or B), and recorded metrics such as task completion time, number of incorrect clicks, and the perceived difficulty of each task. After the A/B test was complete, we sent participants our post-test survey to be completed.

Version A of the prototype featured a search method to add an activity destination already existent within the TOTAGO database. Participants tested with version A were asked to complete the following task list:

1. Navigate to the Activity Log
2. Search for and add the "Mount Alpine" trail
3. Set the activity duration to 40 minutes
4. Add a photo to your activity report
5. Share your post with the TOTAGO feed
6. Save the activity
7. Return to the Activity Log
8. Navigate to Overview
9. Add a new Time Goal for 8 hours per week
10. Change the goal date
11. Save the goal
12. Return to the Activity Log

The activity log in Version B of the prototype featured an interface allowing users to add a new destination *not* within the TOTAGO database. Participants tested with version B were asked to complete the following task list:

1. Navigate to the Activity Log
2. Add a new destination, called "Mount Alpine" to the report
3. Set the activity duration to 40 minutes
4. Add a photo to your activity report
5. Share your post with the TOTAGO feed
6. Save the activity
7. Return to the Activity Log
8. Navigate to Overview

9. Add a new Time Goal for 8 hours per week
10. Change the goal date
11. Save the goal
12. Return to the Activity Log

After completing the A/B test, participants were asked to complete a post-test survey. Our survey incorporated some System Usability Scale (SUS) questions; rather than include all ten SUS questions and risk our survey being too long, such that participants would not be inclined to complete it, we selected the five most important questions for our research questions and study purpose. The trade-off of this decision was that we could not calculate the SUS usability score. However, because our survey aimed to collect mostly qualitative feedback, we were willing to sacrifice the SUS usability score in order to include more relevant comprehension, perceived usability, and preference test questions. The post-test survey questions are as follows:

1. I thought the system was easy to use. (1 - Strongly Disagree, 5 - Strongly Agree)
2. I found the various functions in this system were well integrated. (1 - Strongly Disagree, 5 - Strongly Agree)
3. I would imagine that most people would learn to use this system very quickly. (1 - Strongly Disagree, 5 - Strongly Agree)
4. I found the system unnecessarily complex. (1 - Strongly Disagree, 5 - Strongly Agree)
5. I thought there was too much inconsistency in this system. (1 - Strongly Disagree, 5 - Strongly Agree)
6. What do you think the purpose of this tool is?
7. Does this tool seem to be greater oriented toward users' personal tracking of data OR the sharing of users' information TOTAGO? Why?
8. Did the tool communicate where within the app user information would be stored and displayed? If so, where?
9. The navigation system was intuitive and easy to use. (1 - Strongly Disagree, 5 - Strongly Agree)
10. I understood what each item in the navigation menu represented. (1 - Strongly Disagree, 5 - Strongly Agree)
11. I was able to easily navigate between the Activity Log and Activity Overview pages. (1 - Strongly Disagree, 5 - Strongly Agree)
12. The process of logging a new activity was continuous and consistent. (1 - Strongly Disagree, 5 - Strongly Agree)

13. The process of logging a new activity was easy to complete. (1 - Strongly Disagree, 5 - Strongly Agree)
14. The process of creating a new goal was continuous and consistent. (1 - Strongly Disagree, 5 - Strongly Agree)
15. The process of creating a new goal was easy to complete. (1 - Strongly Disagree, 5 - Strongly Agree)
16. Between the two screens, which do you prefer to add a new activity? (“+” button, “Log Activity” button)
17. Which measurement system for recording time spent outdoors do you find most useful? (Hour interval, Half-hour interval, Minute interval)
18. For the question above, why did you select your choice?
19. Between the two screens, which do you prefer for adding photos to an activity log entry? (Single camera icon, Camera and Camera Roll icons)

#### **IV. Recruitment**

We recruited participants by reaching out to users, utilizing the TOTAGO user email list given to us by our client, as well as non-users from within our communities and peer groups. Each team member recruited two study participants. We sought diversity in our subject pool, attempting to recruit study participants from a variety of demographic backgrounds in order to minimize potential biases during the testing and analysis stages.

### **Analysis of Results**

#### **I. Sample Demographics**

We strived for diversity within our participant pool of non-TOTAGO users in order to get the most accurate results from our validation study. There were eight participants with the male-to-female ratio being 1:1. Their ages ranged from 15 all the way to 56, thus encompassing three generations: Baby Boomer, Millennial, and Generation Z. In terms of education, all participants had some degree of schooling ranging from high school to law school. With the exception of one Asian and one Middle Eastern participant, the majority race was Caucasian.

For our analysis efforts, we factored participants’ age as such variable sheds insight on how they will interact with our prototype. Younger individuals who

are accustomed to mobile devices and will most likely have a greater degree of comfort than their counterparts from previous generation(s).

## II. Statistical Analysis

Statistics indicate that younger participants reported higher levels of comfort using our prototype on a scale of 1 to 5, with 1 being the lowest and 5 being the highest. In fact, Generation Zs reported an average satisfaction value of 4.75, Millennials reported a slightly lower value of 4.67, and Baby Boomers reported a solid 4.0. This confirms our initial speculation that age plays a role in how people interact with interfaces.

```
Descriptive statistics by group
group: Baby Boomer
  vars n mean sd median trimmed mad min max range skew kurtosis se
X1    1 1  4 NA      4      4  0  4  4     0  NA      NA NA
-----
group: Gen Z
  vars n mean sd median trimmed mad min max range skew kurtosis se
X1    1 4 4.75 0.5     5  4.75  0  4  5     1 -0.75 -1.69 0.25
-----
group: Millenial
  vars n mean sd median trimmed mad min max range skew kurtosis se
X1    1 3 4.67 0.58     5  4.67  0  4  5     1 -0.38 -2.33 0.33
>
```

### Completion Time

Version A had an average completion time of 76.75 seconds with a standard deviation of 40.84 seconds whereas Version B's average time was 68 seconds with a standard deviation of 42.71 seconds. Version A's longer duration is attributed to the fact that participants spent nearly 27.2 seconds alone trying to figure out how to navigate to the activity log page in addition to sharing posts to the TOTAGO feed. In comparison, those same tasks on Version B took on average just 15.67 seconds.

### Incorrect Click Counts

Version A's mean incorrect click count is 9 with a standard deviation of 4.03 whereas Version B's mean count is 4.25 with a standard deviation of 8.51. In Version B, participants made the most mistakes when navigating to the activity log and adding destination "Mount Alpine" to the report, accounting for 3 counts or nearly 70.6% of the overall count.

### Post-Task SEQ

The Post-Task SEQ has participants rate each task by level of difficulty, with 1 being the easiest and 5 being the most difficult. Lower values indicate that the task was relatively easy. In Version A, the average SEQ value is 1.38 with a standard deviation of 0.19 while the average of Version B is 1.06 with a standard deviation of 0.17. Again, the difficulty in A stems from participants struggling to access the activity log and sharing contents to the TOTAGO feed while B's difficulty is due to the interface for adding new destinations.

	Avg Completion Time SD = Strd Dev	Avg Incorrect Clicks SD = Strd Dev	Avg Post-Task SEQ (lower=easier)
Version A	76.75s (SD = 40.8)	9 (SD = 4.03)	1.38 (SD=0.19)
Version B	68s (SD = 42.7)	4.25 (SD = 8.51)	1.06 (SD=0.17)

### Statistics Summary

Our team is aiming for a design that is comfortable for everyone. Version A and Version B are largely the same with the exception of methods for inputting destination. Yet, there were significant disparities in completion times, incorrect click counts, and Post-Task SEQ factor. Version A had higher counts of all three metrics compared to B, but much lower standard deviation. We believe this is attributed due to the average age of Version A participants being older - they are not comfortable with IT devices than participants of Version B. Since Version A has a lower standard deviation throughout, we believe it is more understandable for users. While Version B exhibits lower values in all three metrics, the high standard deviation indicates that the interface for adding new destinations is not efficient or straightforward for some users.

### Insights

From our analysis we were able to determine some key insights that ultimately led to a change within our design and the language used throughout the app. After conducting the A/B test we were able to validate some ideas that we initially had.

The first key insight we found was that **inputting information manually, in Test B, caused more confusion for the user and took more time.** After comparing both the qualitative data received from our surveys and analyzing the completion time and incorrect clicks, it was clear that having more things to input caused more errors and confusion in addition to being longer to complete.

The next key insight pertained to **issues in language.** Not only did having inconsistencies in language cause confusion, it also caused our participants to struggle in completing the task altogether. Therefore, we decided to adjust the language within the app.

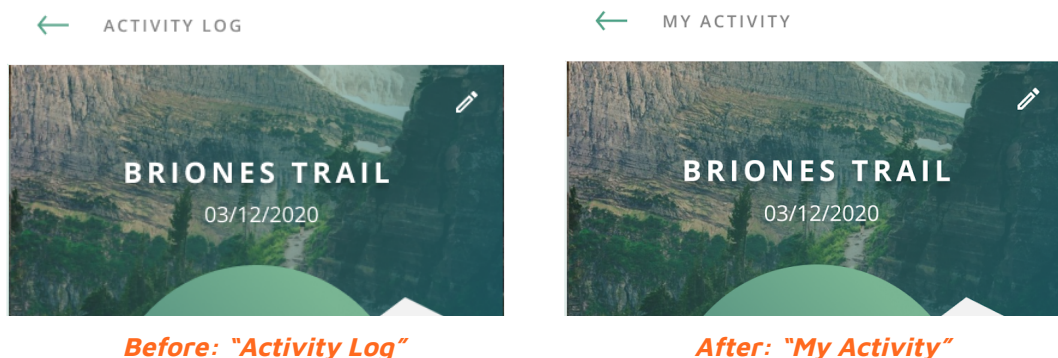
Another issue we found through A/B testing was that 100% of our participants **perceived the app more as a personal activity log** in addition to not understanding where the information went once it was public. Because our client would like the end information shared to a feed or onto trail pages, we realized that it needed to become more apparent to the user that this is not **only** a personal activity log, but desired and valued information for other TOTAGO users.

## Adjustments to Final Design

### Implementation of Consistent Language

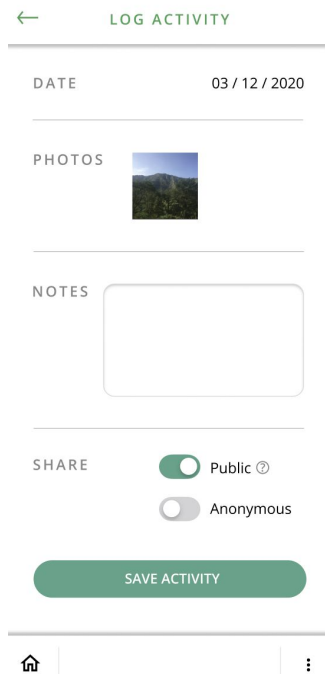
#### I. "Activity Log" to "My Activity"

Originally, the top navigation on the individual metrics page was labeled "Activity Log". This was inconsistent with the labeling of the tab menu, so we adjusted the name to "My Activity", so the title matches the tab menu. Our validation study showed the inconsistent language often confused our participants. Therefore, it was important for us to make this change in order to maintain consistency and reduce confusion.

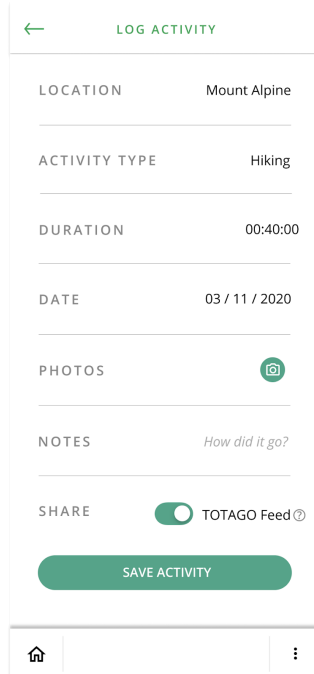


## II. "Public" to "TOTAGO Feed"

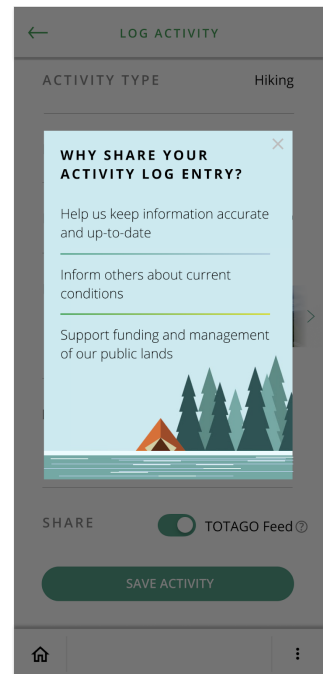
We changed the language of the share switch label to "TOTAGO Feed" because participants had some confusion with the language. By switching to "TOTAGO Feed" we hope to emphasize that it is TOTAGO that will be using the data because it is important to their mission. Furthermore, we included a "Why" pop-up to explain to users how TOTAGO benefits from their data-sharing.



**Before: "Public"**



**After: "TOTAGO Feed"**



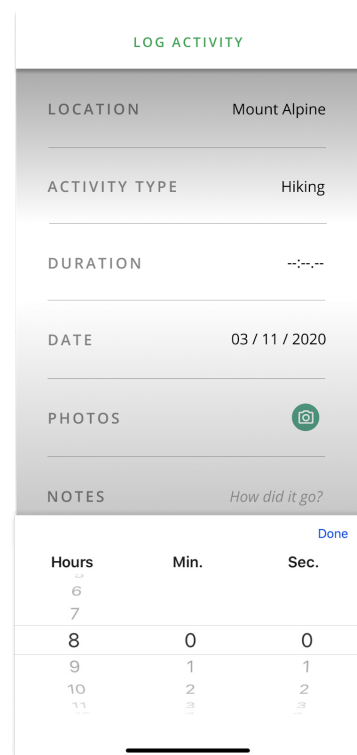
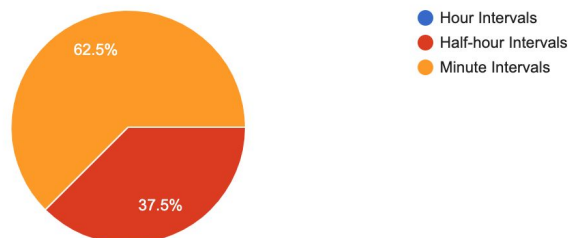
**After: "Why"**

## Minute Intervals

Our post-test survey showed there was a majority preference for minute intervals. Users claimed minute intervals would allow them to accommodate outdoor activities of all duration. Therefore, we added the standard IOS minute interval keyboard to our duration inputs.

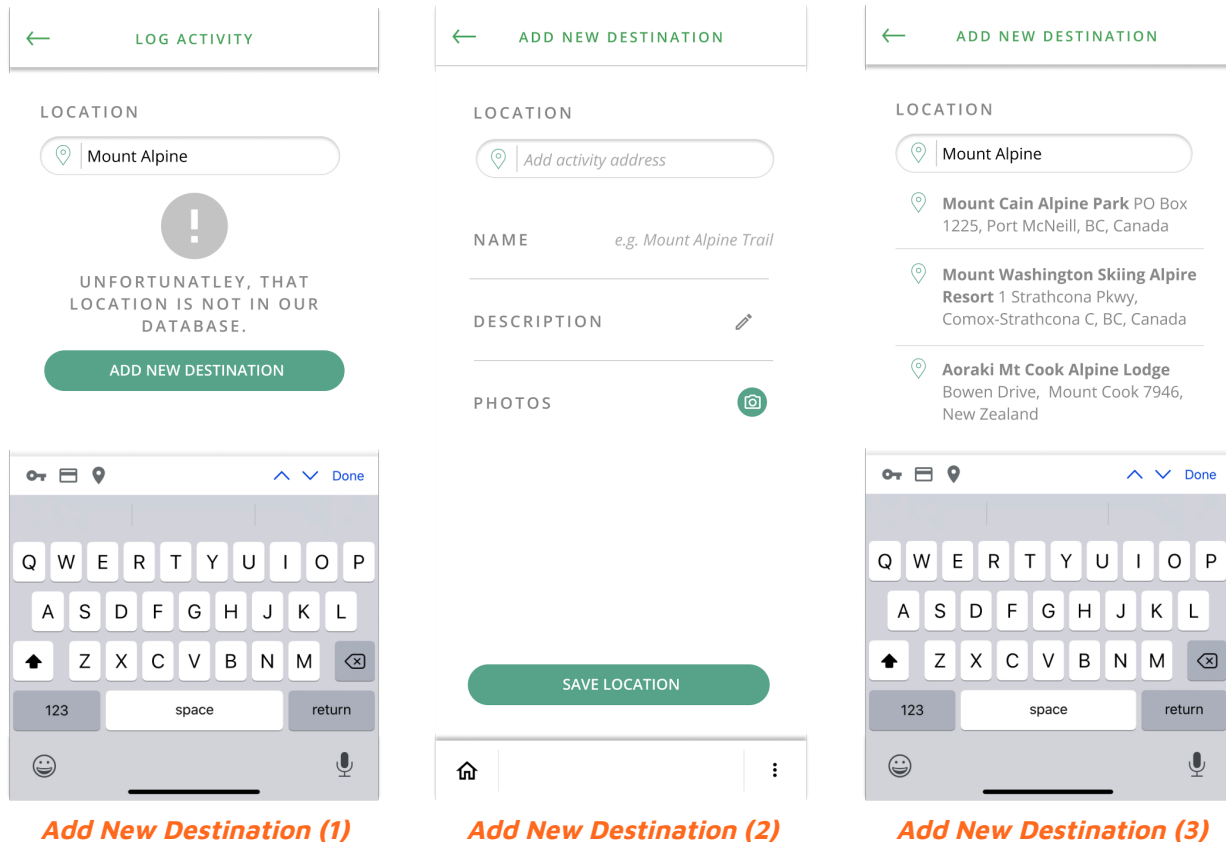
Which measurement system for recording time spent outdoors do you find most useful?

8 responses



## Merge Search & Add New Destination Versions

We merged search versions A and B by keeping the search bar with the “add new” option under and added a flow for that action. Keeping the flow by intention only will eliminate the criteria users have to input. To prevent error, we added the “create new destination” button in the case a search is not found. This way, unfamiliar users are led through the process.



**Add New Destination (1)**

**Add New Destination (2)**

**Add New Destination (3)**



← ADD NEW DESTINATION

LOCATION  
**Mount Cain Alpine Park**  
 PO Box 1225, Port McNeill, BC, Canada


---

NAME                    Mount Alpine Trail

---

DESCRIPTION  
 If you're on a quest for fall foliage, you're probably going to end up in Mount Alpine. Located in the Sierra Nevada jus...

---

PHOTOS 

SAVE LOCATION

🏠 |                    | ⋮

**Add New Destination (4)**


← LOG ACTIVITY

LOCATION                    Mount Alpine

×

**THANK YOU FOR SHARING!**

Your input has been submitted for review!



RETURN

---

NOTES                    *How did it go?*

---

SHARE                     TOTAGO Feed ⓘ

SAVE ACTIVITY

🏠 |                    | ⋮

**Add New Destination (5)**