1. Introduction (Revised)

Expanded the introduction to include clearer study objectives and added context about the importance of usability testing for outdoor apps.
The study investigates how users understand and navigate the "My Altitude" iOS app, with a focus on optimizing the user experience for outdoor enthusiasts and travel bloggers. Given the app's reliance on accurate geolocation data and its use in potentially high-stakes outdoor scenarios, understanding usability gaps is critical for safety and satisfaction.

2. Research Questions (Enhanced)

Refined questions to be more actionable and added a fourth question about accessibility.

1. How do users discover and operate core features of "My Altitude," and what mental models do they form about functionality?
2. Which interface elements cause consistent confusion or errors across user groups?
3. How does user satisfaction vary between free and premium versions of the app?
4. What accessibility challenges do users encounter when using the app in outdoor conditions?

3. Method (Redesigned)

Study Design
Added a pre-test questionnaire and post-task interviews to capture more comprehensive data.

Introduced a mixed-methods approach.
1. Pre-test questionnaire: Gathers baseline expectations and prior experience
2. Think-aloud sessions: Primary data collection
3. Post-task interviews: Deeper exploration of pain points
4. Follow-up survey: Measures satisfaction after reflection period

Personas
Added two new personas based on initial findings.

1. Casual User: Infrequently uses altitude data, primarily for curiosity.
2. Field Researcher: Uses app for professional data collection in remote areas.

Participants
Increased sample size and added screening criteria.

Total: 10-12 participants (was 6-8)

2-3 participants per persona group
Added screening for:
Visual acuity requirements
Prior experience with similar apps
Frequency of outdoor activities

Instruments & Measures

Added new measurement tools and refined existing ones.

Enhanced Discussion Guide with:
Added "first impressions" section
Included emotion tracking prompts
Added feature prioritization exercise
iPhone screen recording with:
Added facial expression capture (with consent)
Touch heatmap analysis
New: Environmental simulation for outdoor testing conditions

Procedure

1.Pre-Test Questionnaire
Demographics and tech proficiency
Previous experience with altimeter apps
Expectations for core features

2.Warm-up Probes
Streamlined and focused questions on mental models:
Walk me through how you expect this app to work before opening it.
What would be your first action after launching the app?
What indicators would tell you the app is working correctly?

3.Tasks
Added difficulty progression and real-world scenarios.

Basic Tasks:
Determine your current elevation with 95% confidence
Check if weather conditions might affect altitude accuracy

Intermediate Tasks:
Save current location data for future reference
Capture and share a geotagged photo with altitude metadata

Advanced Tasks:
Compare current sensor data with historical data files
Troubleshoot when GPS signal is weak

4. Probing Framework
Added standardized follow-up prompts for consistency.

For any observed behavior:
What were you trying to accomplish?
What made you choose that approach?
How confident are you that this worked correctly?
How would you explain this feature to a friend?

5. Post-Session Interview
Feature prioritization exercise
Willingness-to-pay for premium features
Suggested improvements

Data Analysis Plan

Added quantitative metrics and standardized coding.

1. Behavioral Coding:
Success/failure rates per task
Time-on-task metrics
Error frequency and type

2. Verbal Analysis:
Thematic coding of frustration points
Positive experience markers
Vocabulary analysis (user vs. app terminology)

3. Interaction Analysis:
Gesture patterns
Navigation paths
UI element attention

4. Synthesis:
Severity rating for identified issues
ROI matrix for recommended changes
Persona-specific recommendations

5. Implementation Guide

Added practical guidance for researchers.

    Facilitator Tips:
    When to intervene vs. remain silent
    Handling participant frustration
    Managing technical issues

    Equipment Setup:
    Optimal recording configuration
    Backup procedures
    Data management protocol

6. Appendices

    Consent Form Template
    Participant Screening Questionnaire
    Coding Rubric Examples
    Sample Report Outline

Rationale for Changes

1. Increased Sample Size: Initial testing revealed significant variation between users. Larger sample improves reliability.

2. Added Personas: Early sessions showed distinct usage patterns not captured by original personas.

3. Task Restructuring: Original tasks were too linear. New structure better reveals exploratory behavior.

4. Enhanced Measurements: Initial data lacked emotional context. Added metrics provide fuller picture.

5. Standardized Protocols: First round showed facilitator variability. New structure increases consistency.

6. Practical Guidance: Initial sessions encountered preventable technical issues. Added setup guidelines mitigate these.