Safaria - Enhancing Women Safety in Travel

Nikhil Saxena*
International Institute of Information Technology
Hyderabad, India

Junaid Ahmed*
International Institute of Information Technology
Hyderabad, India

Sahil Padole*
International Institute of Information Technology
Hyderabad, India

Figure 1: Women using Safaria to navigate a city with confidence.

Abstract

Women's safety in tourism, particularly in India, poses a significant barrier to their freedom to travel confidently. This paper presents Safaria, a mobile application designed to empower women travelers by addressing critical safety concerns, including harassment, theft, and inadequate emergency support. Through a human-centered design approach, we conducted comprehensive user research via literature reviews, online surveys, and in-person interviews to identify key needs and challenges. Findings revealed that women frequently feel unsafe traveling alone, particularly in poorly lit areas or at night, due to risks like harassment and limited emergency access. Safaria integrates features such as a community-driven forum for sharing experiences, safe itinerary planning with color-coded safety maps, real-time safety scores based on crime rates and user reports, and one-touch emergency calls with audio/video recording capabilities. Usability testing validated the app's intuitive, social media-like interface and effectiveness. This research contributes a scalable, technology-driven solution to enhance women's safety in travel, fostering resilience and confidence. However, it emphasizes that technological interventions must be complemented by societal changes to address cultural complexities and gender discrimination, creating a more inclusive travel environment.

Keywords

Women's Travel Safety, Solo Female Tourism, Human-Centered Design, Mobile Safety Application, Community-Driven Support, Real-Time Safety, Emergency Systems, Safe Itineraries, Gender-Inclusive Travel, Crowdsourced Data, Privacy, Empowerment, Accessibility, Safety, Trust, Harassment, Inclusion, Mobility, Workshops

*All authors contributed equally to this research.

1 Introduction

Traveling provides opportunities for personal growth, cultural exploration, and relaxation, yet for women, particularly in India, it is often overshadowed by pervasive safety concerns. Studies indicate that 60% of women travelers in India report feeling unsafe due to risks such as harassment, theft, and inadequate emergency resources [1]. The privilege of traveling without perceived danger is often taken for granted by men, while women face a "difficulty level" marked by fear, frustration, and uncertainty, often requiring strategies like conservative dressing, pretending to be married, or avoiding eye contact to mitigate risks. Foreign women travelers encounter additional challenges, including aggressive breaches of personal space and language barriers, which exacerbate their vulnerability and limit local support. These challenges restrict women's mobility and autonomy, reinforcing gender disparities in access to public spaces and perpetuating the notion that tourism is a masculine pursuit. The most critical factor contributing to women's sense of safety is the presence of other women, as female workers and peers foster reassurance and inclusivity, though women in tourism face their own issues like wage disparity and harassment. The motivation for this project stems from the urgent need to create safer travel experiences, enabling women to explore with confidence and resilience.

The problem statement centers on the lack of a reliable, women-centric platform to address safety concerns, leaving women to navigate a landscape of poorly lit spaces, unsafe night travel, and limited emergency awareness. Safaria is a mobile application designed to tackle these issues through a human-centered design (HCD) approach, prioritizing user needs to empower women travelers. By offering tools such as real-time safety scores, community-driven

forums, safe itinerary planning, and one-touch emergency access, Safaria aims to mitigate risks while fostering trust and support. The objectives of this project are threefold: (1) to understand women's safety concerns through comprehensive user research, (2) to design an intuitive and effective mobile application tailored to these needs, and (3) to evaluate its usability to ensure practical impact and scalability.

This paper contributes: (1) a robust user research framework capturing the diverse experiences of women travelers, including solo, group, and foreign travelers, (2) the design and prototyping of Safaria with innovative features like community moderation and verified accommodations, and (3) insights into the integration of technology with societal change to address cultural complexities and promote safer, more inclusive travel environments. By combining technological innovation with an emphasis on social reform, this work seeks to transform the travel landscape for women. The following sections detail the literature review, methodology, design process, system description, usability evaluation, discussion, limitations, and conclusions.

2 Literature Review

2.1 Women's Safety in Tourism

Women travelers face disproportionate risks compared to men, with sexual harassment, assault, and theft being prevalent concerns [2]. In India, cultural norms and gender-based violence worsen these risks, with solo female travelers reporting discomfort due to persistent staring and unsolicited advances [1]. According to Lozanski, Western media narratives often depict India as both "exotic" and "dangerous," contributing to conflicting safety perceptions that influence traveler behavior [5]. Thomas highlights that many women avoid night travel, crowded public transport, and remote areas to reduce risk [1]. These realities, shaped by both direct experiences and perceived threats, underscore the urgent need for holistic and targeted safety interventions within tourism frameworks.

2.2 Technology-Driven Safety Solutions

Technology has emerged as a pivotal tool for enhancing women's safety in travel. Numerous applications are designed with features like SOS alerts, location tracking, and emergency contacts. For instance, Navi.io employs crowdsourced data to offer real-time transit updates and supports anonymous incident reporting, thereby increasing user confidence in urban mobility settings [6]. AI-driven safety tools, such as predictive models for identifying crime-prone areas, are also gaining traction in public safety domains [9]. Kolekar emphasizes that while features like safe route planning, community alerts, and auto-notification to emergency contacts are helpful, their effectiveness hinges on usability, real-time functionality, and wide accessibility [4]. However, as Scott points out, technology adoption is often hindered in patriarchal contexts where women may have restricted access to smartphones, the internet, or digital literacy [12]. Addressing these structural and infrastructural barriers is critical to ensuring technological interventions reach the women who need them most.

2.3 Theoretical Frameworks

The development of Safaria is grounded in human-centered design principles, focusing on empathy, co-creation, and iterative refinement. This approach ensures that the platform remains aligned with the actual needs and experiences of women travelers. Drawing inspiration from popular social media interfaces, Safaria's UI/UX is designed to be intuitive and trust-enhancing, especially for first-time users. Furthermore, Safaria incorporates community-driven moderation informed by electronic word-of-mouth (e-WOM) frameworks, using mechanisms like verified profiles and upvote/downvote systems to ensure content credibility [11]. This design philosophy integrates feedback loops and social proof to improve safety, trust, and engagement. Through these theoretical lenses, Safaria aims to create a digital space that not only informs but also empowers women navigating the complexities of travel and mobility.

3 Methodology

3.1 Design Approach

We adopted a Human-Centered Design (HCD) methodology to ensure that the Safaria application truly addresses the safety needs and challenges faced by women travelers. HCD emphasizes empathy, user involvement, and iterative feedback throughout the development process. The approach began by deeply understanding the users through a blend of quantitative and qualitative research. This was followed by ideation and low-to-high fidelity prototyping, with each design iteration being validated and refined through user testing. By consistently involving users, we ensured that the app's functionalities were aligned with real-world scenarios, habits, and needs, as expressed by the target demographic. The HCD process guided the creation of intuitive, context-aware features such as the SOS button, safety ratings, and community-based help systems, which were all derived from direct user input and feedback.

3.2 Research Methods

Our user research was conducted in two distinct yet complementary phases to collect both quantitative data and rich qualitative insights:

- **Online Survey:** A structured Google Forms survey was distributed to 35 women travelers of varying age groups and backgrounds. The survey aimed to assess travel frequency, perceptions of safety, concerns while traveling, and the utility of various proposed features in a safety-oriented app. Key focus areas included the use of technology during emergencies, trust in local authorities, preferred sources of help, and factors influencing the sense of safety in unfamiliar locations. The survey also gave knowledge of emergency services and tested interest in features like location sharing, SOS, and safety reviews. This phase allowed us to identify statistically significant patterns, such as the high percentage of women feeling unsafe while traveling alone at night and a general lack of awareness about local emergency resources.
- **In-Person Interviews:** Semi-structured interviews were conducted with 6 women across various personas including solo travelers, family vacationers, group tourists, and business travelers. Each session, conducted with prior consent,

was voice-recorded. These conversations revealed nuanced challenges such as fear during ride-hailing at night, hesitation to approach strangers or authorities for help, and the emotional burden of navigating unfamiliar environments while staying alert for threats. The interviews also illuminated preferred app interfaces and decision-making patterns in emergencies. Insights from these sessions were added into user personas and journey maps, helping the team understand situational triggers for anxiety and unmet needs in existing safety mechanisms.

The mixed-methods research approach allowed us to build our findings—survey data provided breadth while interviews offered depth. Analysis was employed to extract recurring concerns and behavioral patterns from qualitative data, while statistical summaries from the survey informed the prioritization of app features. Among the dominant themes identified were a higher fear of traveling alone at night, the inadequacy of location-specific safety information, and a lack of clarity on how to access or use emergency services effectively. These insights directly informed both the feature set and the user interface design of the Safaria app.

4 Design Process

4.1 Problem Framing & User Research

The design journey began with identifying key safety concerns faced by women travelers. To validate and understand these problems in depth, we adopted a dual-phase user research strategy: a quantitative online survey and in-depth qualitative interviews. Our survey, which reached 35 respondents, revealed that 70% of women felt unsafe while traveling alone. The most frequently cited concerns were harassment (45%) and theft (30%). Night travel stood out as particularly problematic, with 80% of respondents pointing to inadequate lighting and transport security as major issues.

Only 25% of women were aware of official emergency helplines such as 112 or women's police lines, and a mere 10% had ever used safety-related mobile apps. These findings exposed a stark gap in both safety awareness and the accessibility of digital tools tailored to women's needs. Furthermore, many respondents expressed difficulty in distinguishing trustworthy services or locations while traveling.

To complement the survey data, we conducted semi-structured interviews with 6 women travelers. This qualitative phase allowed us to gather deep, experience-based insights into emotional, environmental, and systemic safety challenges encountered across different travel modes. Interviewees shared stories of unease in public transport, reluctance to approach local authorities, and a strong desire for real-time support systems. From these narratives, we built detailed user personas and empathy maps to capture the emotional landscape of female travelers.

Synthesizing data from both research modes, the team identified six key user needs: immediate access to emergency assistance, visibility into the safety profile of places, social support through travel groups, access to credible community insights, culturally informed behavior, and smart itinerary planning. These themes directly shaped the design of Safaria's core features.

4.2 Ideation & Concept Development

Now with the research insights, we initiated an intensive ideation process. Drawing inspiration from successful travel and safety apps such as Navi.io, TripWise, and citizen-led tools like Safetipin, the team conducted brainstorming workshops using "How Might We" statements to frame the problem from different user perspectives [6, 11]. This allowed for divergent thinking while remaining grounded in user pain points.

Key ideas that emerged included: a dual-button emergency calling interface; a travel group feature for like-minded women; a forum for sharing experiences verified by the community; and an interactive safety score that would dynamically adapt to a user's location. Another standout concept was the ability to view verified safety-rated accommodations and plan itineraries that avoid high-risk zones.

These concepts were refined through mind maps, information architecture, insights, use case diagrams, and feedback from 10 users who helped us identify the most essential and feasible ideas. Trust and real-time utility emerged as primary values, prompting us to emphasize verified user profiles, location-aware safety information, and curated support networks. Users consistently expressed interest in services that go beyond passive alerts and instead offer actionable personalized safety insights, such as planning a safe route or joining a travel group for support. This phase solidified the app's goal: not only to inform, but to empower.

4.3 Prototyping

We began prototyping by developing low-fidelity wireframes in Figma to test the core navigational structure and layout logic, after having clear idea of how the core functionalities should turn out. We then transitioned to high-fidelity mockups with a more user-friendly interface: warm tones to signal comfort and safety, verified badges for trust, color-coded safety maps for spatial awareness, and a layout similar to familiar social platforms to reduce memorability.

Prototypes were repeatedly iterated with guidance from relevant stakeholders. This iterative process ensured that users could locate key features like the emergency call button or safety score dashboard within seconds, and that they could complete critical tasks with minimal confusion.

Several high-impact use cases were modeled into the prototype and evaluated in context. These include:

Use Case 1: One-Touch Emergency Call. This feature empowers women in distress by offering two clearly marked emergency buttons on the home screen. One connects to a national helpline (e.g., 112), and the other opens a location-specific list of women-centric helplines, such as city-specific police lines or NGO support. Upon user consent, the app initiates call recording (audio/video), which is securely stored. After the call ends, users are prompted to share the recording with a pre-listed guardian. This layered mechanism enables fast, personalized help while maintaining a digital trail for future accountability.

Use Case 2: Create/Join a Women's Travel Group. Recognizing that many women feel safer when traveling in numbers, this feature allows users to form or join travel groups categorized by destination, date, or interest. Group creators act as admins with moderation

privileges, ensuring safety and coordination. Group members can share itineraries, receive alerts, and collaborate on logistics. This creates a sense of collective awareness and emotional reassurance while minimizing risks through peer monitoring.

Use Case 3: View Safety Score of a Location. A real-time safety score appears on the home screen, generated by aggregating crime data, presence of essential services, public presence, and crowd-sourced reports. Users can personalize the weightage of these metrics based on individual concerns—e.g., giving higher priority to lighting or crowd presence during solo night trips. This feature guides users in making proactive location decisions, adjusting routes, or avoiding high-risk zones altogether.

Use Case 4: Share Experience in Community Forum. The "Discuss" tab offers a transparent, location-based forum for women travelers to share personal experiences, raise safety alerts, or offer tips. Threads can be anonymous to protect privacy, while verified profiles and moderator controls maintain content reliability. Voting mechanisms surface the most helpful posts. This collective storytelling builds a holistic knowledge base, enabling users to learn from each other's realities.

Use Case 5: Plan a Safe Itinerary. This module generates customized itineraries using the safety score engine and user preferences. It suggests safe transport routes, verified stays, optimal stopovers, and neighborhood-level safety overlays. Users can filter out unsafe zones and receive alerts if route conditions deteriorate. The itinerary is displayed with green/red zoning on an interactive map, giving users both safety and planning intelligence in one place.

Use Case 6: Attend Women-Centric Safety & Cultural Workshops. To prepare users both physically and culturally, the app recommends local workshops such as self-defense classes, cultural etiquette sessions, and emergency response briefings. These are curated through partnerships with local NGOs, authorities, or veteran women travelers. Workshops are location-based and may be virtual or in-person. This empowers users to be situationally informed, reducing discomfort and fostering respectful engagement with diverse cultures.

Each use case was validated through usability walkthroughs, scenario simulations, and user feedback loops, ensuring alignment with both user needs and emotional expectations. The final design not only delivers safety functionality but also fosters community, learning, and empowerment—all within a mobile-first platform tailored for the modern woman traveler.

5 System Description / Final Design

Safaria is a dedicated mobile application aimed at addressing key safety concerns faced by women during travel. The final design of the application is rooted in extensive user research and iterative feedback, and integrates a diverse set of features, each targeting a specific challenge identified during the design process. The application offers a unified platform that combines real-time safety data, community-driven insights, and emergency response tools to empower women travelers with confidence and control.

- **Community Forum:** The "Discuss" section of Safaria is designed as a supportive space where women travelers can openly share and explore experiences related to different locations, such as cities, neighborhoods, or accommodations. Users can search for a location to view its safety rating, read past threads, or start new discussions. Posts can be submitted anonymously to encourage honest conversations, while verified user badges and upvote/downvote mechanisms help surface the most reliable insights. Moderators and user reporting tools help maintain content quality and flag misinformation. The forum fosters a transparent, trustworthy environment where collective knowledge helps users assess risks and travel smarter.

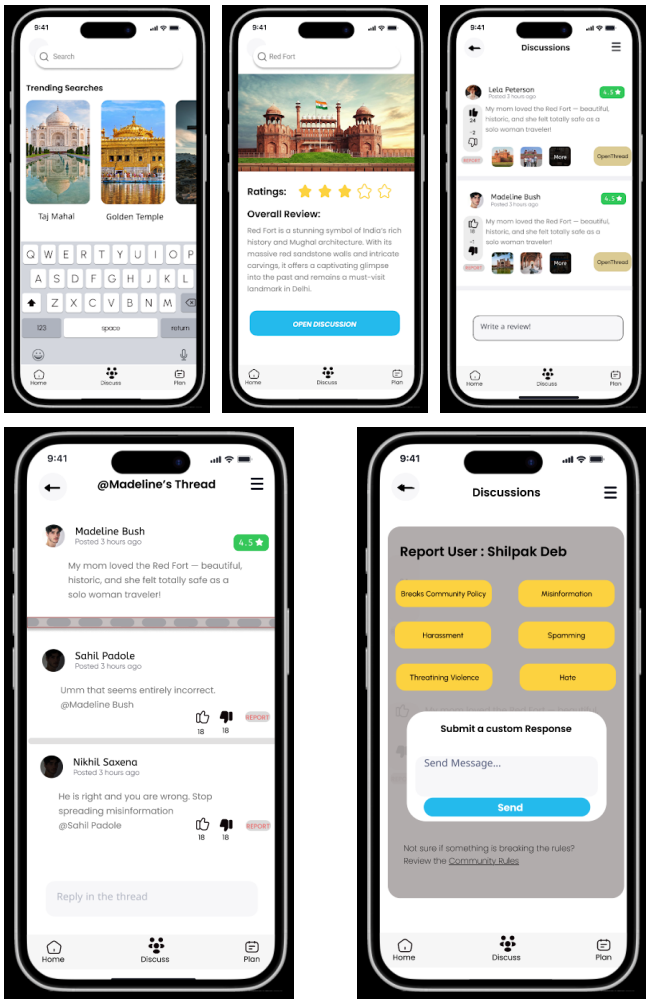


Figure 2: Screenshots demonstrating feature flow.

- **Safe Itinerary Planning:** The app allows users to build personalized, safety-first itineraries using a combination of user preferences, community feedback, and algorithmic suggestions. The itinerary includes recommendations for safe routes, verified accommodations, optimal stopovers,

and preferred modes of transport. Color-coded maps visually represent safe (green) and unsafe (red) zones based on real-time data. Filters enable users to customize their plans by excluding high-risk areas or prioritizing women-friendly activities. This helps reduce uncertainty and equips users to make proactive decisions during trip planning.

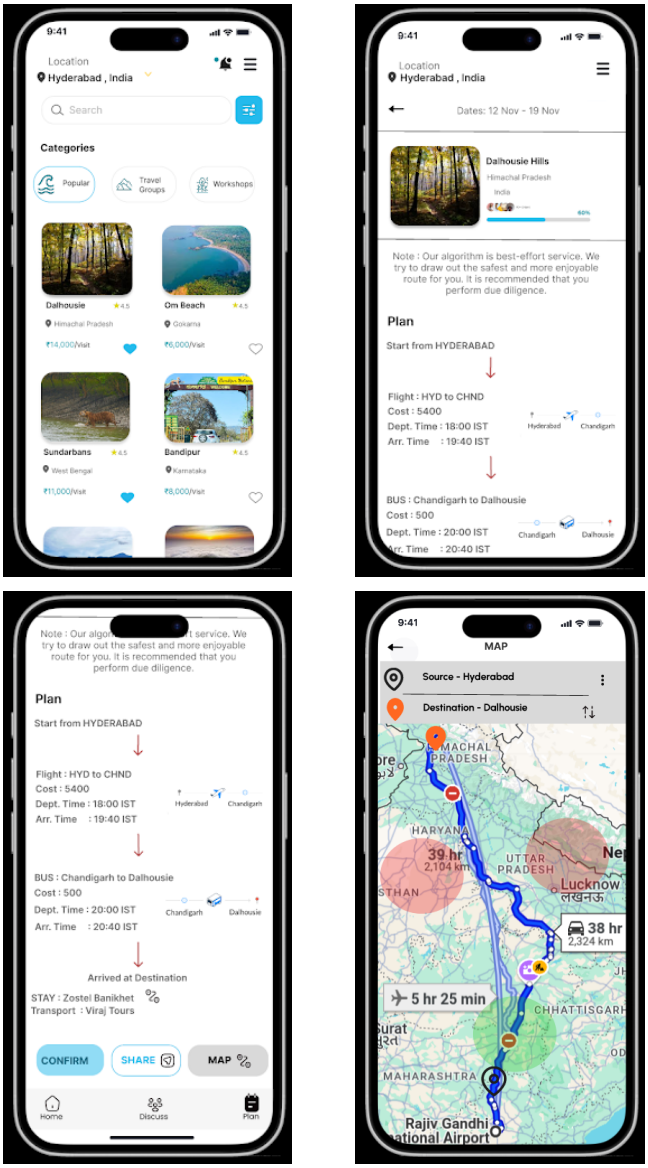


Figure 3: Screenshots demonstrating feature flow.

- **Safety Score Display:** A real-time safety score is displayed on the home screen and is dynamically calculated using weighted metrics: crime rate (40%), community-sourced user reports (30%), proximity to essential services like police stations and hospitals (20%), and public presence indicators (10%). Users can modify the default weightings to align with their individual risk tolerance—such as increasing the importance of public presence for solo night travel. Additionally, users can view the safety score for other locations via a dropdown menu. This personalized, data-driven feature supports informed navigation and risk mitigation.

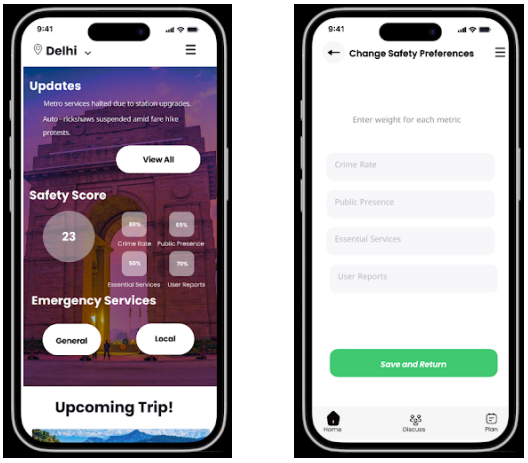
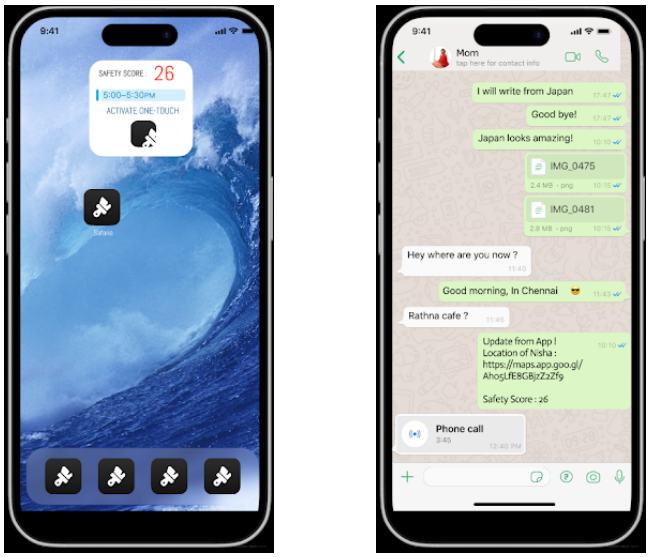


Figure 4: Screenshots demonstrating feature flow.

- **One-Touch Emergency Call:** Safaria's home screen features two distinct emergency buttons: one for general national helplines (e.g., 112) and another for location-based, women-specific services such as city-wise women police lines and NGO helplines. Tapping either button initiates a direct call and—with the user's consent—automatically starts recording audio or video. After the call, users can review the recording and securely send it to a trusted contact. A built-in WhatsApp widget allows for instant message dispatch to pre-saved emergency contacts. This layered emergency response system ensures rapid action and promotes accountability through digital traceability.



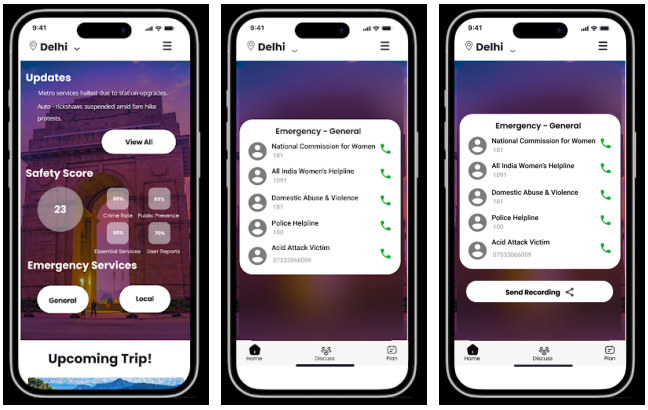


Figure 5: Screenshots demonstrating feature flow.

- **Women's Travel Groups:** Users can create or join travel groups based on shared destinations, dates, or interests. These groups serve as a safety network where members can exchange updates, coordinate travel logistics, and support one another. Group creators act as admins and have the authority to manage members and send urgent safety alerts. Being part of a group helps mitigate the risks of solo travel and fosters a sense of collective security, emotional support, and camaraderie among women travelers.

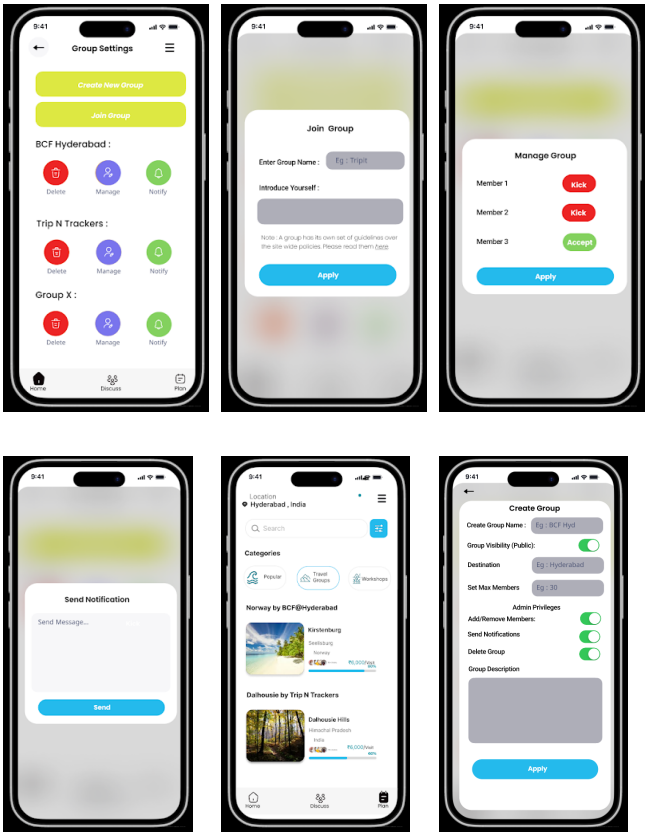


Figure 6: Screenshots demonstrating feature flow.

- **Safety Workshops:** The app curates and recommends workshops based on a user's location or travel destination. These include sessions on self-defense, emergency preparedness, travel safety, and cultural etiquette. The workshops may be virtual or held on-site, in partnership with NGOs, local authorities, and seasoned travelers. Details such as timing, venue, and language options are provided. This initiative aims to equip women with both the physical and cultural tools needed to handle emergencies and interact respectfully in new environments.

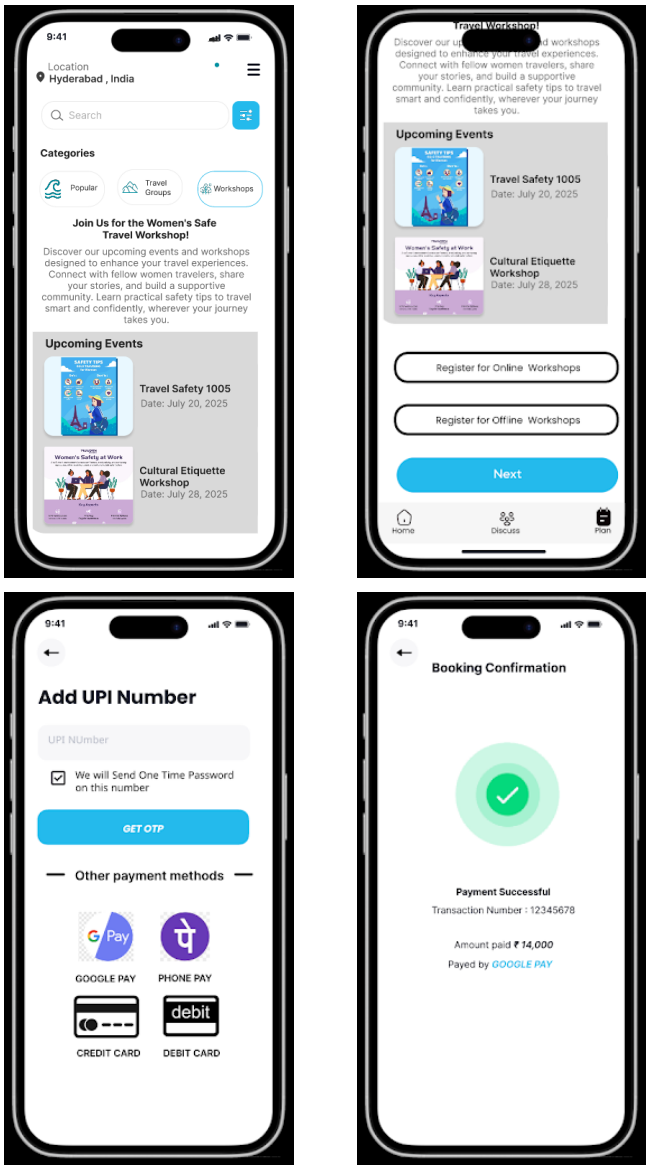


Figure 7: Screenshots demonstrating feature flow.

The application's interface is modeled after familiar social media platforms to reduce the learning curve and increase engagement.

Key interface features include a scrollable home feed, tabbed navigation, intuitive color-coded safety maps, and optional accessibility settings like changing user settings, and edit profile for better visibility. The user experience prioritizes usability, emotional reassurance, and functional robustness, ensuring Safaria is not only a tool for safety but also a companion for confident exploration.

6 Usability Evaluation

6.1 Evaluation Method

Usability testing was conducted on Safaria's high-fidelity prototype (version 1) using Figma to ensure the application is intuitive, trustworthy, and effective in meeting user needs. Reviewers evaluated six key use cases: one-touch emergency call activation, women's travel group creation/joining, viewing safety scores, sharing experiences in the community forum, planning a safe itinerary, and registering for women-centric safety and cultural workshops. The evaluation metrics included task completion, error rates, and user satisfaction, which were assessed through detailed questionnaires to capture both quantitative and qualitative feedback. Testing focused on verifying whether the prototype addressed user research findings, such as the need for a familiar interface, credible information, and quick access to safety features.

6.2 Findings

The usability testing revealed that Safaria's social media-like interface was highly intuitive, achieving a 90% task completion rate across all use cases, with users praising its familiarity and ease of navigation, resembling platforms they already trust. This design choice, inspired by user research highlighting trust in familiar app interfaces, encouraged engagement and reduced the learning curve for new users. Below, we detail the findings for each use case, incorporating specific observations and user feedback from the testing process.

Use Case 1: One-Touch Emergency Call The one-touch emergency call feature allows users to tap either a "General" button (e.g., 112) or a "Local" button (curated by location) from the home screen, presenting a list of helpline numbers. After a call, users can review and share optional audio/video recordings (with consent) with trusted contacts, and a phone home screen widget enables sending an automatic emergency message via WhatsApp. The dual buttons are prominently placed for quick access, clearly distinguishing national and local helplines, and location-based women-specific helplines provide specialized support. However, 30% of users noted the absence of a post-call confirmation popup, which could reassure users that the call was initiated. Suggestions include adding a confirmation popup and a first-use tutorial explaining the dual buttons, recording, and sharing features to improve clarity for novice users.

Use Case 2: Create/Join a Women's Travel Group Users access group settings via the side panel on the home screen, choosing to "Create Group" or "Join Group" and setting admin privileges for tasks like adding/removing members or sending safety updates. Group creation was found to be intuitive and simple, with admin privileges supporting safety-focused management, enabling users to build location- or interest-based travel groups for social support and deterrence against unsafe situations. However, the joining process lacks a detailed group preview (e.g., member count, admin profile, group rules), which could help users make informed decisions before requesting access. Recommendations include adding a group preview to enhance transparency and trust in the joining process.

Use Case 3: View Safety Score of a Location From the home screen, users can view a real-time safety score for their current location or select another via a dropdown, with the option to adjust metric weights (e.g., crime rate 40%, user reports 30%, proximity to services 20%, public presence 10%) in the settings panel. The safety score is intuitive and location-aware, empowering users to make informed decisions and avoid high-risk areas. However, customizable weights confused 20% of novice users, and the detailed metric breakdown lacked explanatory guidance, potentially overwhelming less tech-savvy individuals. Suggestions include offering a beginner mode with default weights, enabling direct navigation to settings by clicking home screen metrics, and adding color-coding to enhance interpretability.

Use Case 4: Share Experience in Community Forum In the "Discuss" tab, users can search for a location, view safety ratings and reviews, open discussions, post experiences or questions, and engage with threads using upvote/downvote systems or report misinformation. The social media-like interface enhances familiarity and engagement, while the upvote/downvote moderation increases confidence in consensus opinions, and reporting tools effectively filter out pertinent reviews. Users appreciated the option for anonymous posting and verified moderators ensuring credible content. Suggestions include adding a preview option before submitting posts, enabling draft saving for later resumption, and allowing tagging (e.g., "Safety Tips," "Accommodation Review") for easier content discovery.

Use Case 5: Plan a Safe Itinerary In the "Plan" tab, users select a travel group based on their destination, generating an itinerary with safe routes, verified accommodations, and transport options, visualized on a color-coded map (green for safe, red for unsafe zones). Itinerary generation is seamless, with clear safety-focused filters, and the color-coded map is visually intuitive, enhancing route planning. However, sharing lacks confirmation feedback, and offline access is missing, limiting usability in low-connectivity areas. Recommendations include adding confirmation messages for saving/sharing itineraries and an offline download option for itineraries and maps.

Use Case 6: Attend Women-Centric Safety & Cultural Workshops In the "Plan" tab's "Workshops" section, users browse workshops by date (e.g., Self-Defense Training, July 20, 2025), view details, and register for offline or online sessions using payment methods like UPI or debit card, or select free options. Workshop browsing is clear, and registration is streamlined, resembling familiar UPI flows, making it user-friendly. However, the lack of a free event filter limits accessibility for users seeking cost-free options. Suggestions include adding a filter for free workshops to improve inclusivity.

Overall Observations and Recommendations The social media-like UI was a significant strength, fostering trust and engagement, but complex features like safety score customization require additional guidance to accommodate novice users. The emergency access features were quick and reliable, though confirmation popups are needed to enhance user reassurance. Community interaction through the forum and travel groups was engaging,

supported by upvote/downvote systems and admin controls, but previews and tagging could improve usability. Itinerary planning was efficient and safety-focused, yet offline functionality is critical for real-world use. Workshop access was streamlined, but inclusivity could be improved with free event filters. Key recommendations include implementing confirmation popups across actions, introducing beginner guides or tutorials for complex features, adding offline functionality for itineraries and maps, and enhancing content discovery with tagging and previews. These improvements aim to address identified gaps, ensuring Safaria meets the diverse needs of women travelers effectively.

7 Discussion

Safaria's development marks a significant advancement in addressing women's safety concerns in travel, particularly in India, where cultural norms and gender-based violence heighten risks [1, 2]. Through a human-centered design (HCD) approach, Safaria integrates user-driven features like one-touch emergency calls, real-time safety scores, community forums, and safe itinerary planning, directly responding to findings that 70% of women feel unsafe traveling alone, with harassment (45%) and theft (30%) as primary concerns. This discussion reflects on Safaria's contributions, alignment with research, trade-offs, and broader implications, while identifying future directions.

Alignment with User Needs and Research. Safaria's features address critical user needs identified through surveys and interviews, such as low awareness of emergency services (25%) and the need for peer support [7]. The one-touch emergency call, with audio/video recording, facilitates rapid access to helplines and promotes accountability, while the community forum, inspired by e-WOM frameworks, fosters trust through verified badges and moderation [11]. The safety score, leveraging crime data and user reports, empowers proactive decision-making, aligning with AI-driven safety tools [9]. The social media-like interface, achieving a 90% task completion rate in usability testing, reduces the learning curve, addressing barriers to technology adoption in patriarchal contexts [12]. These features collectively empower women, challenging male-centric tourism narratives [5].

Contributions to Women's Safety. Safaria offers a scalable, mobile-first platform that combines real-time data, community insights, and emergency tools, distinguishing it from apps focused solely on alerts [4]. Socially, it fosters a virtual community, countering isolation through forums and travel groups [6]. Theoretically, it advances HCD in gender-inclusive tourism, contributing to discourses on equality [14]. The workshop feature, addressing cultural competence, responds to unexpected user demand for navigating social norms, particularly for foreign travelers [5].

Trade-Offs and Challenges. Balancing feature complexity with usability was a key trade-off. Customizable safety scores confused 20% of novice users, necessitating simpler defaults [12]. Reliance on user-generated data risks biased safety scores, particularly in low-engagement areas. Future iterations could use AI to validate data or partner with NGOs for accuracy [9]. The emotional labor of travel, revealed in interviews, suggests a need for mental health resources, such as relaxation exercises, to complement existing features [1].

Broader Implications. Safaria challenges gender disparities in tourism by empowering women to navigate public spaces confidently [15]. However, technology alone cannot address root causes like patriarchal attitudes or inadequate infrastructure [3]. Public awareness campaigns and policy reforms are essential to complement Safaria's impact [10]. Future directions include global expansion with localized features, wearable device integration, and gamification to sustain user engagement [4].

8 Limitations & Ethical Constraints

Safaria's effectiveness depends on reliable internet access, a challenge in India's rural areas, where only 31% of women own smartphones [12]. Crowdsourced data may be unreliable in less-traveled regions, requiring alternative sources like government databases [9]. Privacy concerns arise with audio/video recording and location sharing, necessitating transparent policies and robust encryption to maintain trust, especially where surveillance fears are prevalent [13]. Cultural resistance to women using safety apps in patriarchal societies may limit adoption, requiring engagement with community leaders [3]. The lack of offline functionality restricts usability in low-connectivity areas, a critical gap for fair and reasonable access.

Ethically, location tracking and audio/video recordings raise privacy concerns. Robust encryption and informed consent are critical to prevent data breaches. The safety score algorithm risks perpetuating biases if user reports are unverified, potentially stigmatizing certain areas. Ongoing ethical audits and diverse data validation are recommended to ensure fairness.

9 Conclusion

Safaria is a human-centered mobile application designed to empower women travelers by addressing critical safety concerns, particularly in high-risk areas like India, where harassment and theft are prevalent. Its innovative features—such as one-touch emergency calls, real-time safety scores, community forums, and safe itinerary planning—provide practical tools and foster a sense of community, helping women travel with greater confidence and autonomy. By tackling the fears highlighted in user research, Safaria promotes resilience and challenges gender-based barriers in tourism.

However, the app's impact relies on broader societal changes, including improved infrastructure, such as better lighting and emergency services, and cultural shifts to dismantle patriarchal norms [10]. Future enhancements could include offline functionality for remote areas, mental health resources to address the emotional toll of travel, and global expansion to support women worldwide [1, 14]. Safaria's potential to transform tourism lies in its blend of technology and advocacy, but sustained innovation and collaboration with communities and policymakers are essential to ensure women can explore safely and freely.

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A Appendix - Survey and Interview Questions

- What is your age group?
- Which type of traveller are you?
- How frequently do you travel?
- What are your top safety concerns while traveling?
- Have you ever faced a safety issue while traveling?
- If yes, what kind of issue did you face?
- How do you ensure your safety while travelling?
- Do you feel safe traveling at night in new cities?
- What challenges do you face when travelling at night?
- Do you know the emergency helpline numbers for different places you travel to?
- Have you ever contacted emergency services while travelling?
- If yes, how was the response?
- Have you used safety apps?
- If yes, which features have you used in safety apps?
- What improvements would make travelling safer for women?
- Do you have any personal experiences or suggestions regarding women's travel safety?