How a Participatory Design co-design workshop was implemented into the design thinking process to increase user empowerment

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ABSTRACT

This pictorial presents an overview of a co-design workshop conducted to implement participatory design into the design methodology of a mobile application for female solo travellers with the goal of empowering users.

A review of current literature on the topics of solo female travel, empowering design, and participatory design, as well as the rationale, process, results, and insights of the co-design workshop, are presented and analysed to determine the effectiveness of implementing participatory design to increase user empowerment.

Authors Keywords

empowerment; ux design; participatory design; user centred design; co-design workshops; design thinking

THE CONTEXT

Designing for Empowerment

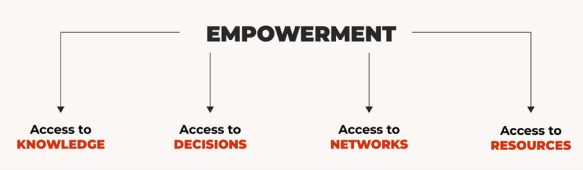
Human-computer interaction (HCI) products should always aim to empower users as a way to engage them, encourage them, and give them an "I've got this!" feeling that will increase their enjoyment of using a product and ensure they continue to use it [1]. When it comes to digital products, UX and user interface (UI) can be critical vehicles of empowerment.

Even so, there is currently no standardised design framework for achieving user empowering design (UED). Rather, different researchers have defined their own principles (seen right) which were amalgamated and applied to this project's design methodology.

Solo Female Travel

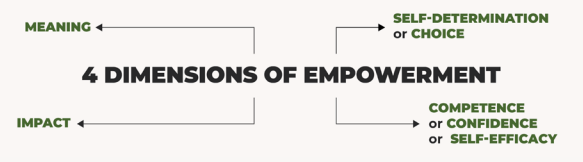
The solo female travel market has experienced extreme growth in recent years. There has been a 230% increase of women-only travel organisations since 2013 [2] and an 88% increase in bookings made by solo female travellers from 2015-2018 [3].

It has been widely recognized by research that although there are some constraints, women are increasingly choosing to travel alone [4, 5, 6] and that solo travel is a vehicle of empowerment for women [2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15].



Wang & Burris claim that empowerment need to include 4 types of access [16].

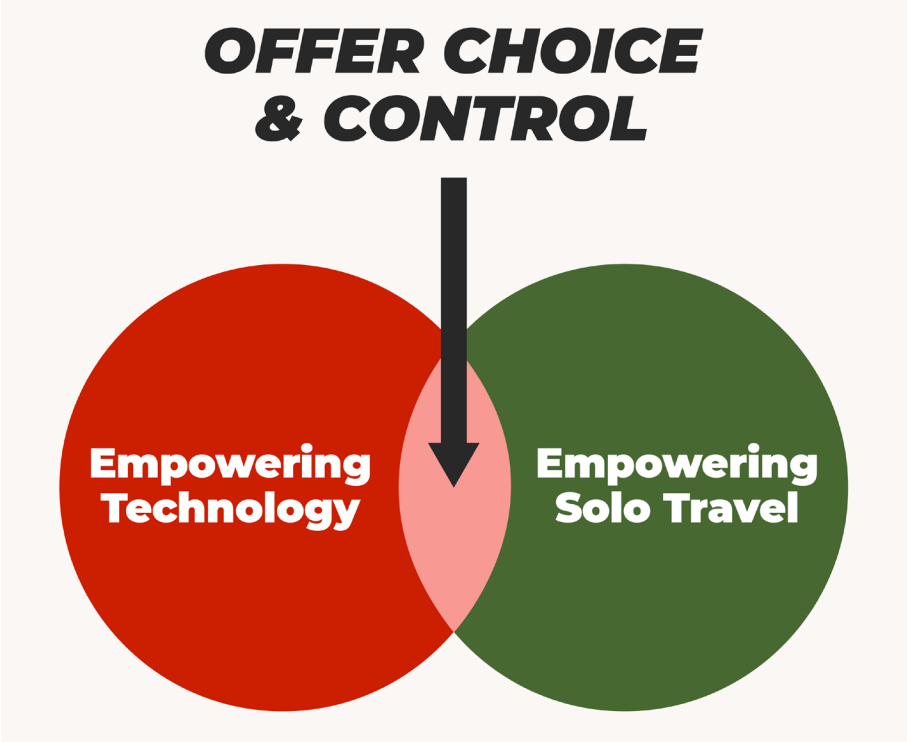
Schneider's principles of empowering technology [17].



The four dimensions of empowerment [18].

Empowerment and Choice

Choice and control are an important part of empowerment, and are prevalent and recurring themes across research when it comes to both empowering design [16, 17, 18, 19, 20] and empowering solo travel [14].



Choice and control are a central part of both empowerming technology and empowering solo travel

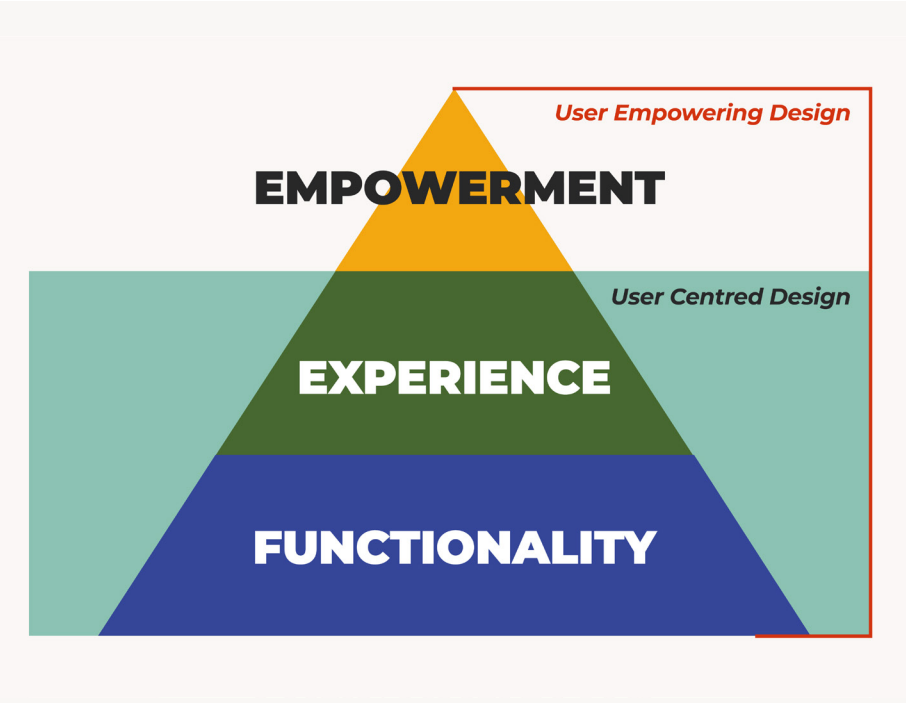
Participatory Design

Empowerment can be achieved when users become co-authors of a system interaction [21], and when self-determination is present in designs [20, 22]. These ideas draw on participatory design ideals, whereby designers and researchers attempt to empower users by involving them in the design process of a product or application [23] and allowing them to give their valuable insights and feedback.

In the context of designing an app to empower solo female travellers, a participatory design approach was incorporated into a user-centred design methodology through a co-design workshop to help achieve empowerment by giving users choice and control, as described in this pictorial.

THE PROCESS

Although using a user-centred design (UCD) approach ensures the focus is on the users of a product and not on the product itself, it is argued that because UCD only focuses on usability and UX design, and not on empowerment (seen below), user empowerment needs are not necessarily met when using only UCD [20].



Visualisation of UED ideology (detailed overleaf) [20].

Because the goal of this project was to empower users, a focus on user choice and control was used in conjunction with UCD to foster a more UED ideology. To do this, participatory design was incorporated into the design thinking process with a remote co-design workshop, which directly involves users in the Define, Ideate, and even Prototype phases of the design thinking process (right), not just the Empathise phase through user research as is standard. Users aren't just passive recipients of a product but are involved in the envisioning of them [24].

Before the Workshop

The steps taken to recruit participants and organize and build the co-design workshop are detailed below.

Right: The Design Thinking Process and Goals, Outcomes, and Techniques for each phase

Below: Steps taken to prepare for the co-design workshop

THE DESIGN THINKING PROCESS

Participatory design

EMPATHISE

Goal:
Who is the user? What matters to this person?
- Collect user data to understand what users feel, experience, think,need, and prefer.
- Perform desk research + analyse direct and indirect competitors to identify gaps in current products and offerings.
- Understand current / future trends, or to get further insights.
- Research existing literature, identify research gaps

Outcome:
- Comprehensive literature review
- Qualitative & quantitative data
- Content analysis

Technique:
- Literature Review
- Online survey
- SME Interviews (3)
- Competitor Analysis

DEFINE

Goal:
What are their needs?
- Analyse data gathered from user research
- Clearly articulate the key user problem(s) and user need(s)
- Identify challenges & pain points
- Create human-centric problem statements
- Explore the human context

Outcome:
- Visual representations of the user and the problem(s)

Technique:
- Personas and empathy maps
- Problem statements
- HMW + JTBD statements
- Journey mapping

IDEATE

Goal:
How can this problem be solved?
- Idea generation
- Brainstorm as many ideas as possible
- Creatively solve the user problem
- Involve potential users in brainstorming ways to solve their own challenges
- Uncover unexpected areas for innovation

Outcome:
- Visual artefacts, sketches, collages, or notes

Technique:
- Co-design workshop
- Task analyses
- Rapid sketching
- Moodboard
- Mindmap
- Lean UX Canvas

PROTOTYPE

Goal:
How can this idea be brought to life?
- Create a prototype as a representation of one or more ideas to show to others
- Iterate different versions for A/B testing

Outcome:
- Working prototype

Technique:
- Wireframing
- Low fidelity prototype
- High fidelity prototype
- Pilot testing

TEST

Goal:
What works? What doesn't?
- Share prototyped solution with target users for feedback
- Iterate & refine based on feedback
- Validate if solution answers research questions

Outcome:
- Qualitative and quantitative data
- Finalised prototype
- Confirm hypotheses acccuracy

Technique:
- Remote user testing (moderated or unmoderated?)
- Post-test questionnaire
- SUS Scale

STEP 1: RECRUIT

Emphasis on recruiting both experienced and novice solo travellers of different ages and geographic locations.

Invitation sent via email which included:
- Workshop vision and goals
- Brief overview of what to expect
- 2 proposed dates/ times
- An encouraging, empowering, and friendly TOV

Goal: 5-8 participants
Outcome: 13 participants contacted
7 confirmed

From	Age	Have Travelled Solo?
USA	25-34	Y
USA	25-24	Y
IE	25-34	Y
USA	45-54	N
USA	45-54	N
UK	18-24	N
IE	35-44	N

STEP 2: CREATE AGENDA

PART 1: INTRO & WARMUP

1. Introduction
   - Goals, Outcomes, Duration, Things to Remember
2. Overview of background + context based on literature review
3. **Activity:** Ice breaker
   - Get participant comfortable and familiar with Miro tools/capabilities
4. **Activity:** Brainstorming warmup #1
   - How can tech, people, objects, & environment make you feel safe?
5. **Activity:** Brainstorming warmup #2
   - How can tech, people, objects, & environment make you feel empowered?

PART 2: DEFINE

6. Overview of Empathise Phase
   - Online survey results
7. **Activity:** Define the problem & create HMW statements
   - Users articulate the problem that needs to be addressed
8. **Activity:** "Worst Possible Idea"
   - Warm up for ideation
   - Relaxes, boosts confidence, stokes creativity
   - Challenge assumptions and gain insights towards great ideas

PART 3: IDEATE

9. **Activity:** App feature brainstorm
   - Brainstorm ways to address the problem
   - Facilitator to compare these user ideas with user ideas from survey
10. **Activity:** Open Card Sort
    - See how users group and categorise proposed features from previous activity and survey responses
11. **Activity:** Empowering Features
    - Introduce elements of empowerment, have users brainstorm app features for each element

PART 4: PROTOTYPE (DESIGN)

12. **Activity:** Crazy 8s
    - Users rapidly sketch 8 ideas in 8 minutes
    - Generate a wide variety of solutions & bring an idea to life
13. **Activity:** Trustworthy + empowering app brainstorm
    - Find out what apps users find trustworthy and empowering & why (Design? Features? TOV?)
    - Use this insight to help inform future design decisions
14. **Activity:** Aesthetics
    - What designs / color combos stand out to users?
    - Use this insight to help inform future design decisions
15. **Activity:** Name brainstorm
    - Bring app to life
    - Have users brainstorm app name based on ideas and sketches

STEP 3: PREPARE WORKSHOP

Due to COVID-19 restrictions and geographical constraints, the workshop was held remotely using the online collaboration tool Miro.

All workshop activities included simple and clear instructions, time allotment, and a clear indication of how to display work using a color coded system and examples.

Special attention was given to including a variety of activities, and to not format all activities the same.

Running the Workshop

The facilitated, remote workshop was held January 9th 2022 at 6pm GMT. A reminder email with the Miro link was sent to participants 2 hours before the start of the workshop, with details of how to access the Microsoft Teams meeting link, Miro board, and what to bring (only pen and paper). An encouraging tone of voice (TOV) was used in all correspondence with participants before the workshop, but also during the workshop, with a special focus on reiterating that design/artistic skills were neither required nor expected.

The workshop consisted of both standardised and bespoke co-design activities, designed to take the users through a "miniature" version of the design thinking process, as shown on the previous page.

THE RESULTS

For the following activities, this colour code applies:

Participant #1: Red

Participant #2: Purple

Participant #3: Green

Participant #4: Orange

Activity 1: Icebreaker

Participants were asked to create a collage depicting the term "empowerment." This allowed users to familiarise themselves with Miro's tools while also giving insight into what empowerment means to them.

Activity 1 seen right

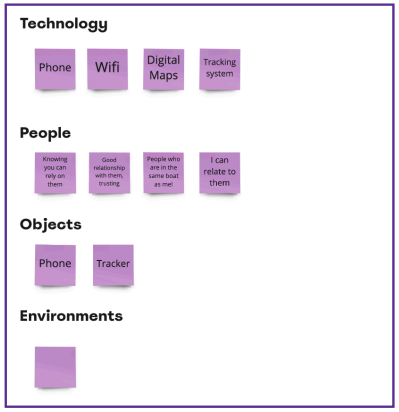
Activities 2 & 3: Brainstorming Warmups

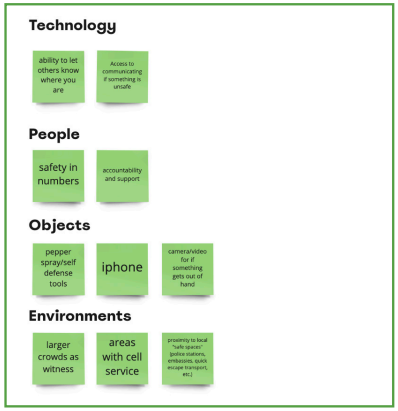
To warm up for further brainstorming activities, participants were asked to brainstorm how technology, people, objects, and environments can make them feel safe and empowered. This got them thinking about how external factors can help or hinder empowerment and safety.

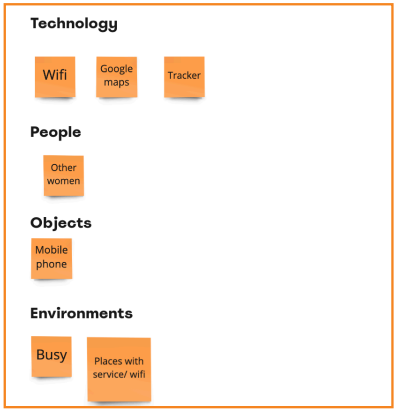
Participants had similar answers for both activities, showing the relationship between feeling safe and feeling empowered. Mobile phones were also a recurring theme.

Activity 2 seen below (left) and Activity 3 seen below (right)

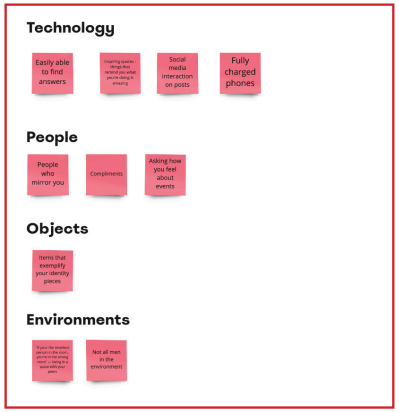
Think about what it means to feel safe. Brainstorm below:
How can **technology** make you feel safe? How can **people** make you feel safe? How can **objects** make you feel safe? How can an **environment** make you feel safe?

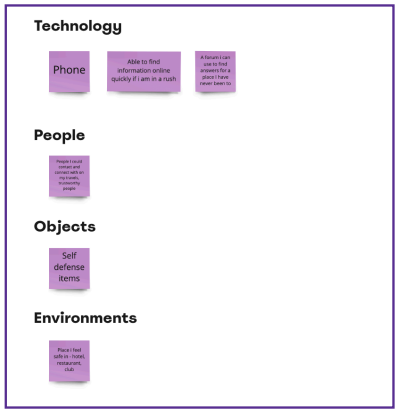


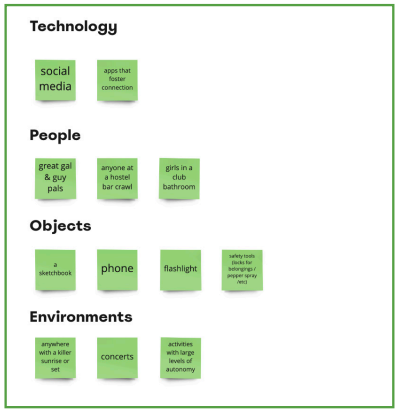


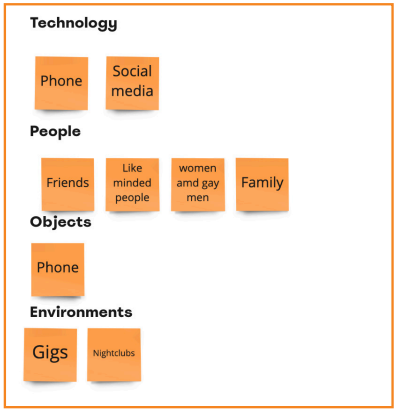


Think about what it means to feel empowered. Brainstorm below:
How can **technology** make you feel empowered? How can **people** make you feel empowered? How can **objects** make you feel empowered? How can an **environment** make you feel empowered?





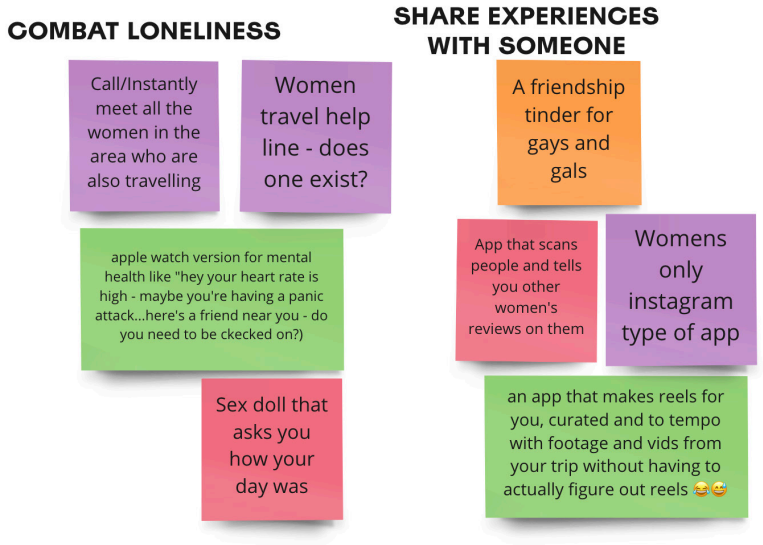




Activity 4: Defining the Problem + HMW

Next, the participants were given an overview of the results of the online survey conducted during the exploratory research phase. After studying the results, participants were asked to articulate the problems that need to be addressed and then rephrase the identified problems as How Might We (HMW) statements, a common method used to expand thinking and create a framework to resolve challenges [25].

Activity 4 seen right



Activity 5: Worst Possible Idea

"Worst Possible Idea" is an ideation technique where users actively seek the worst solutions to a problem [26].

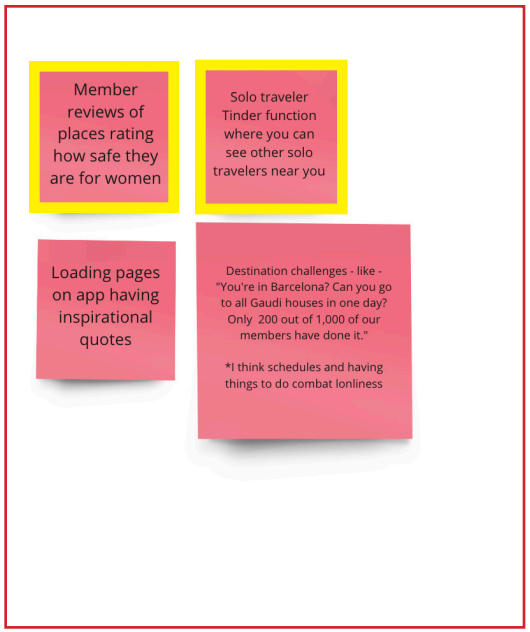
It boosts participants' confidence, takes away pressure, and loosens them up, which will make them more willing to share and engage in later brainstorms. It can also foster unconventional thinking which can lead to powerful insights and a foundation for good ideas [26].

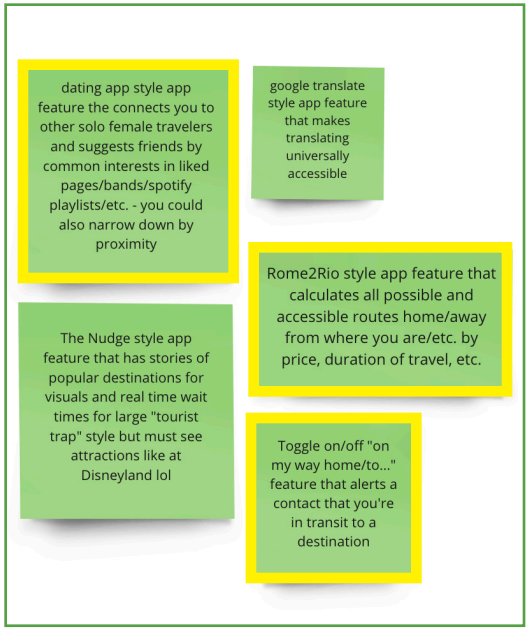
Activity 5 seen left

Activity 6: App Feature Brainstorm

After defining the problem and coming up with bad solutions, the users were asked to come up with 5-10 genuine ways a mobile app could solve the problems that were evident from the survey results and their own findings.

At the end of the exploratory research survey, respondents were asked what features they would like to see on an app designed specifically for female solo travellers in another attempt to allow them to have a direct say in what they want to see in a product meant for them. Respondents were free to write as much or as little as they wanted. Workshop participants were not shown those responses, but did end up brainstorming the same features that were repeatedly mentioned in the survey (seen in yellow).





When asked about app features that would be helpful for solo travellers...

Out of 386 respondents, **137** mentioned **safety features** such as:

- Safety rankings by other women of places that are safe or to avoid (**73**)
- Emergency services/law enforcement contact details, & location tracking (**40**)
- Location tracking / ability to share whereabout or itinerary with friends and family (**26**)

57 mentioned finding other solo travellers nearby to do things with

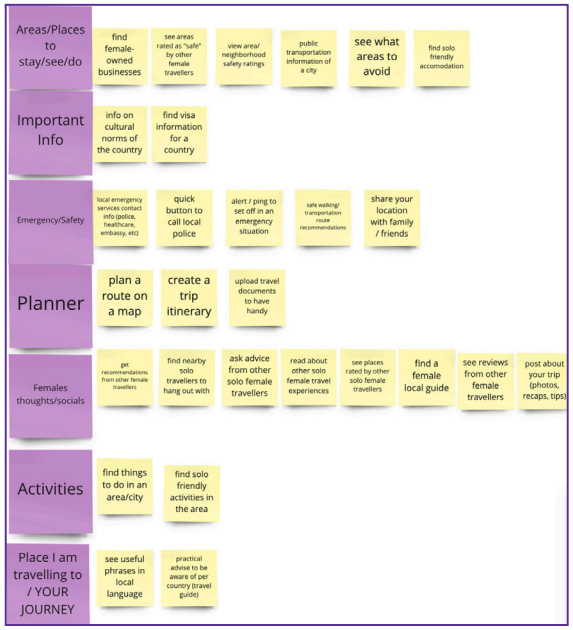
22 mentioned cultural norms/local tips/practical advise for country (travel guide)

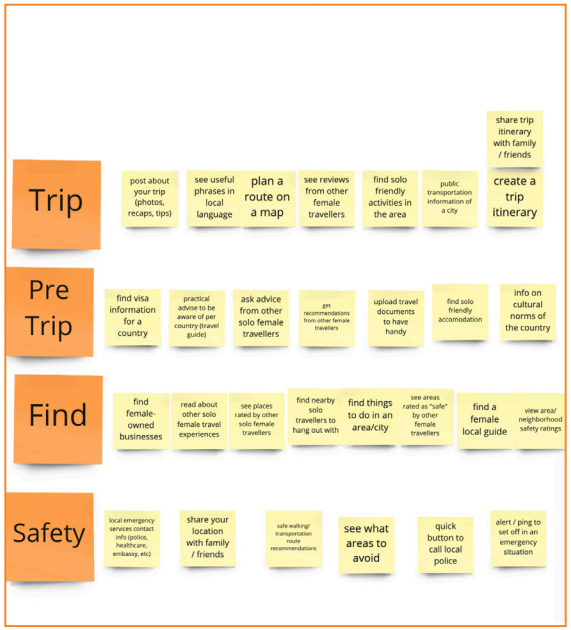
19 mention recommended transportation routes

18 mention an alert/pint to set off in an emergency situation

Above: Summary of survey responses when asked what features they would like to see in an app for female solo travellers.

Left: Activity 6 responses





Activity 7: Open Card Sort

In attempt to organise features, participants were next given 29 features that were proposed during the survey and previous activities and asked to group them in a way that made sense to them and to then name each group.

Card sorting is a powerful and simple tool that gives insights into users' mental models and knowledge structures, and what information architecture makes sense to them [27].

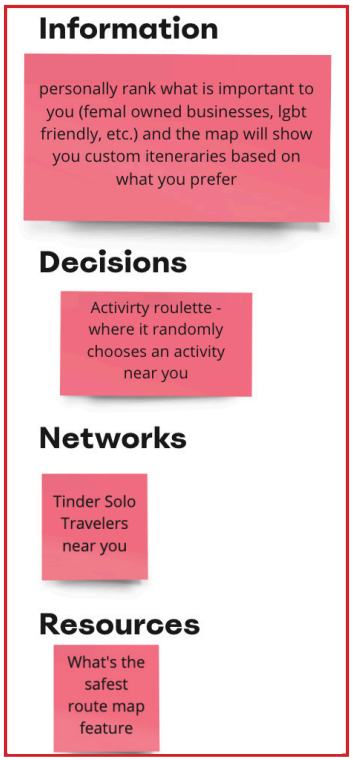
Although users named categories differently, patterns emerged. All users had a planning category (P1: "Adventure Pride," P2: "Planner," P3: "Plan," P4: "Pre-Trip") and a safety category (P1: "Emergencies," P2: "Emergency/Safety," P3: "Protect," P4: "Safety").

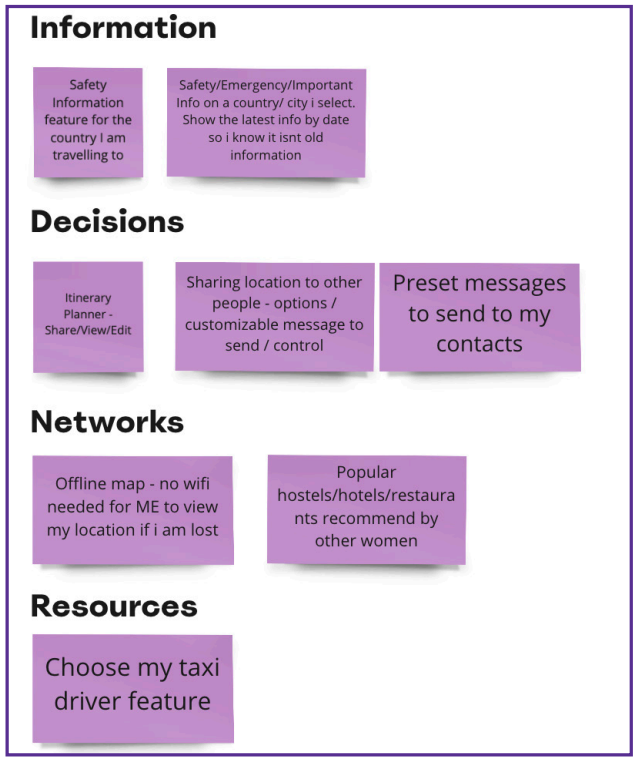
Activity 8: Empowering Features

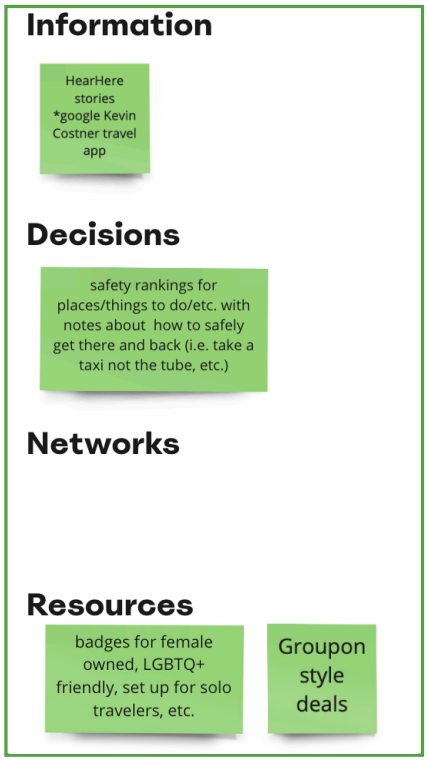
People are empowered when they have access to knowledge, decisions, networks, and resources [16].

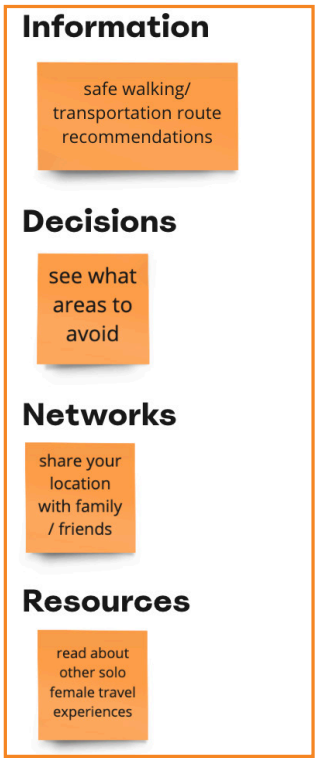
This exercise was originally designed to be a closed card sort, whereby participants would organise the same list of 29 features from the previous exercise into these 4 categories. However, due to time constraints, participants were asked to simply brainstorm one feature per category (seen overleaf).

Activity 7 seen left







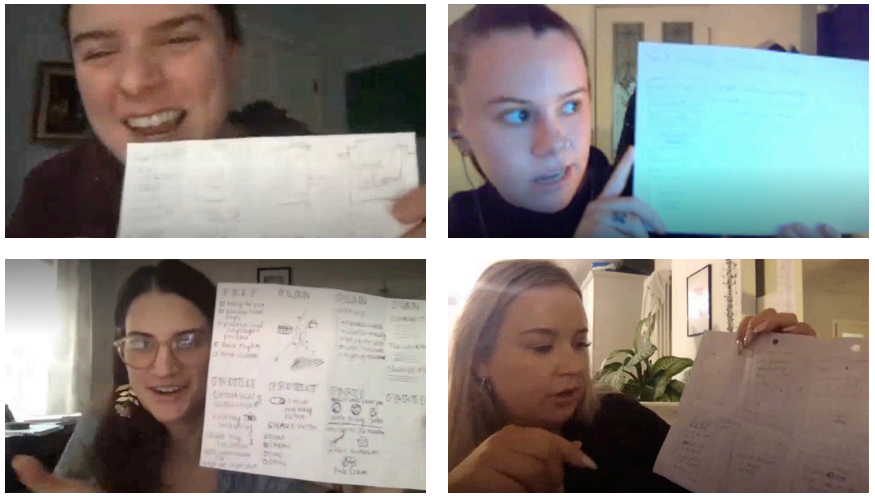


Activity 8 seen above

Activity 9: Crazy 8's

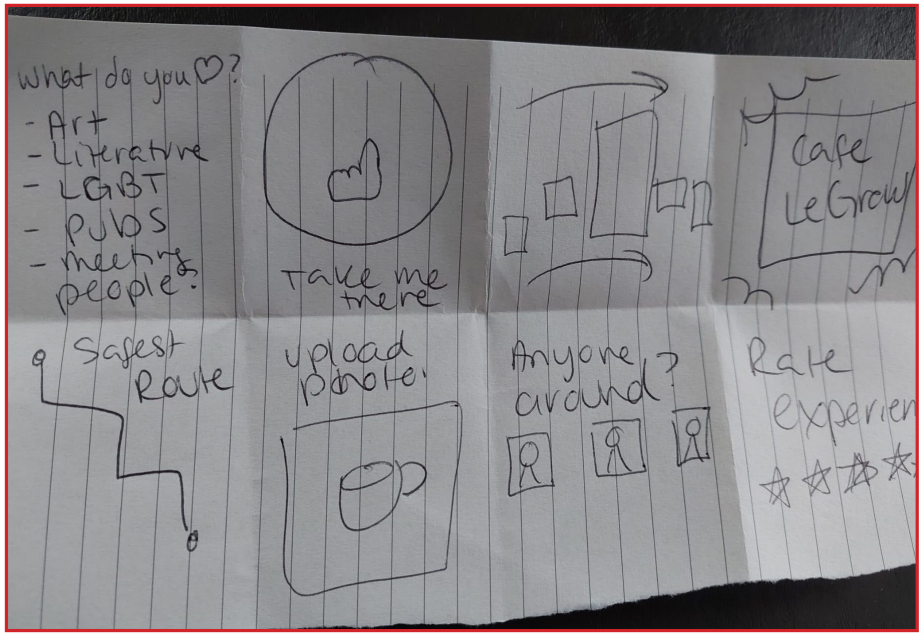
Crazy 8's is a well-known design sprint method focusing on rapid idea generation through quick sketching [28]. Participants are asked to quickly sketch 8 ideas out in 8 minutes, to push them beyond their first ideas and generate a variety of solutions [29].

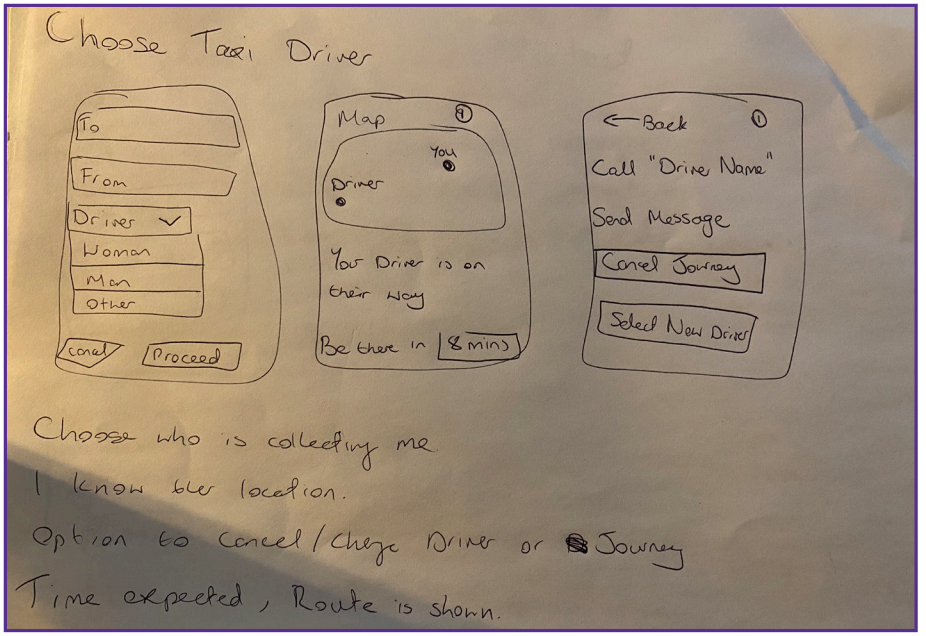
This was the first exercise (seen overleaf) that got users putting pen to paper thinking about the design of the product and how the ideas they had generated throughout the workshop could actually be brought to life.



Participannts present their crazy 8s sketches (right).

Participants' final sketches seen on next page.


What do you ♡?
- Art
- Literature
- LGBT
- Pubs
- meeting people
Take me there
Cafe LeGrow
Safest Route
Upload photo
Anyone around?
Rate experien


Choose Taxi Driver
To
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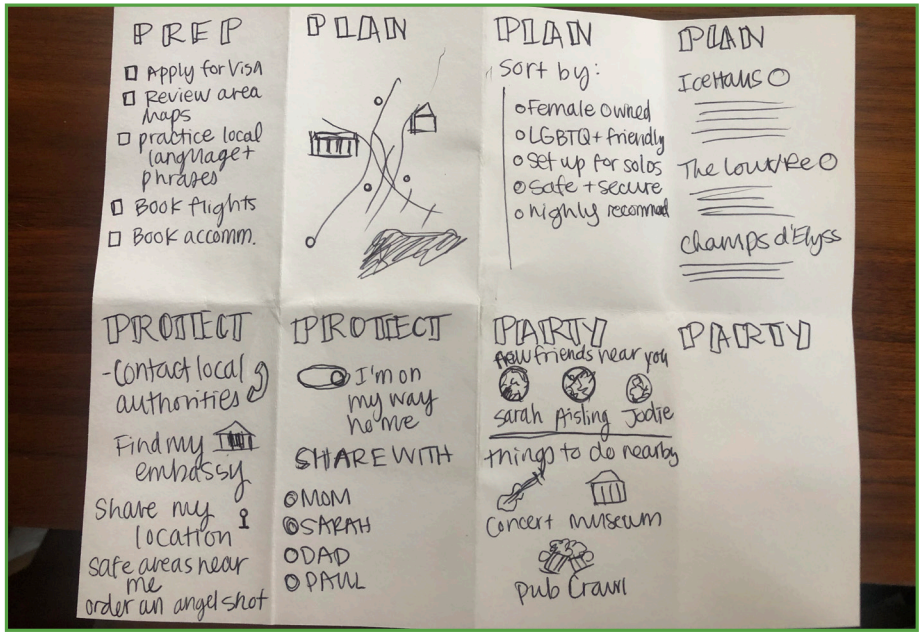
Choose who is collecting me
I know her location.
Option to Cancel / Change Driver or Journey
Time expected, Route is shown.


PREP
Apply for VISA
Review area maps
practice local language + phrases
Book flights
Book accomm.
PLAN
PLAN
Sort by:
Female owned
LGBTQ+ friendly
Set up for solos
Safe + secure
highly recommend
PLAN
Icehaus
The Louvre
Champs d'Elyss
PROTECT
-Contact local authorities
Find my embassy
Share my location
safe areas near me
order an angel shot
PROTECT
I'm on my way home
SHARE WITH
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New friends near you
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things to do nearby
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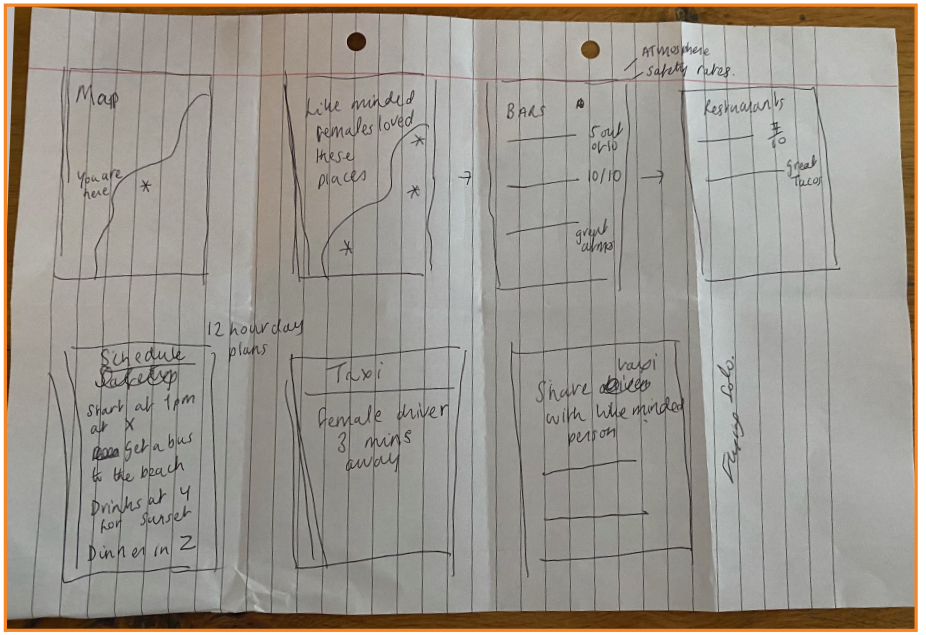
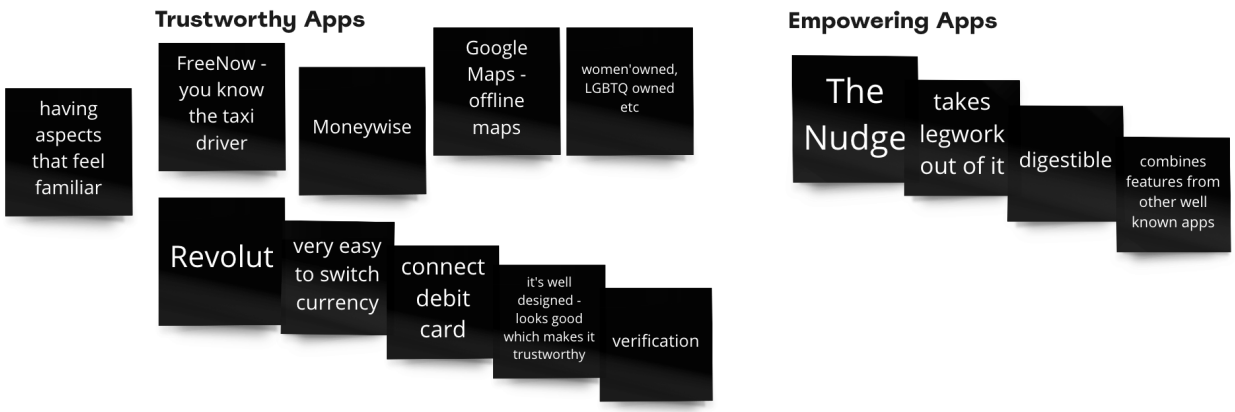
museum
Pub Crawl
PARTY


Map
You are here
Like minded females loved these places
BARS
5 out of 10
10/10
great cocktails
Restaurants
great tacos
Atmosphere
Safety rules
12 hour day plans
Schedule
Start at 1pm at X
Get a bus to the beach
Drinks at 4 for sunset
Dinner in Z
Taxi
female driver
3 mins away
Share taxi with like minded person
Change plans

Activity 10: Empowering and Trustworthy Apps

In this activity, users were asked to identify apps that they found empowering and/or trustworthy and explain why. This gave insights into how design, features, TOV, or other aesthetics could convey empowerment or trustworthiness, and will help inform future design decisions.

Activity 10 seen right



Activity 11: Aesthetics /Design

Users listed any apps they love the design of, and were also encouraged to brainstorm colour palettes/ combinations that they are drawn to or would like to see in the proposed app as another way to directly involve them in design decisions.

Activity 11 seen right

Activity 12: Naming

Lastly, after brainstorming features, proposing design layouts, and colour schemes, users were given an opportunity to name the proposed app to bring it to life even more. This allowed the workshop to end on a fun yet thought-provoking exercise.

Activity 12 seen right

LESSONS LEARNED

What went well

In the post-workshop survey, participants rated “Strongly Agree” or “Agree” to all questions (right). They noted that they enjoyed doing the activities, hearing others’ opinions, and felt comfortable and encouraged to share their ideas after each exercise. Participants strongly agreed that they learned a lot from the workshop, are proud of their contributions, and that overall the workshop made them feel empowered.

What didn’t go well

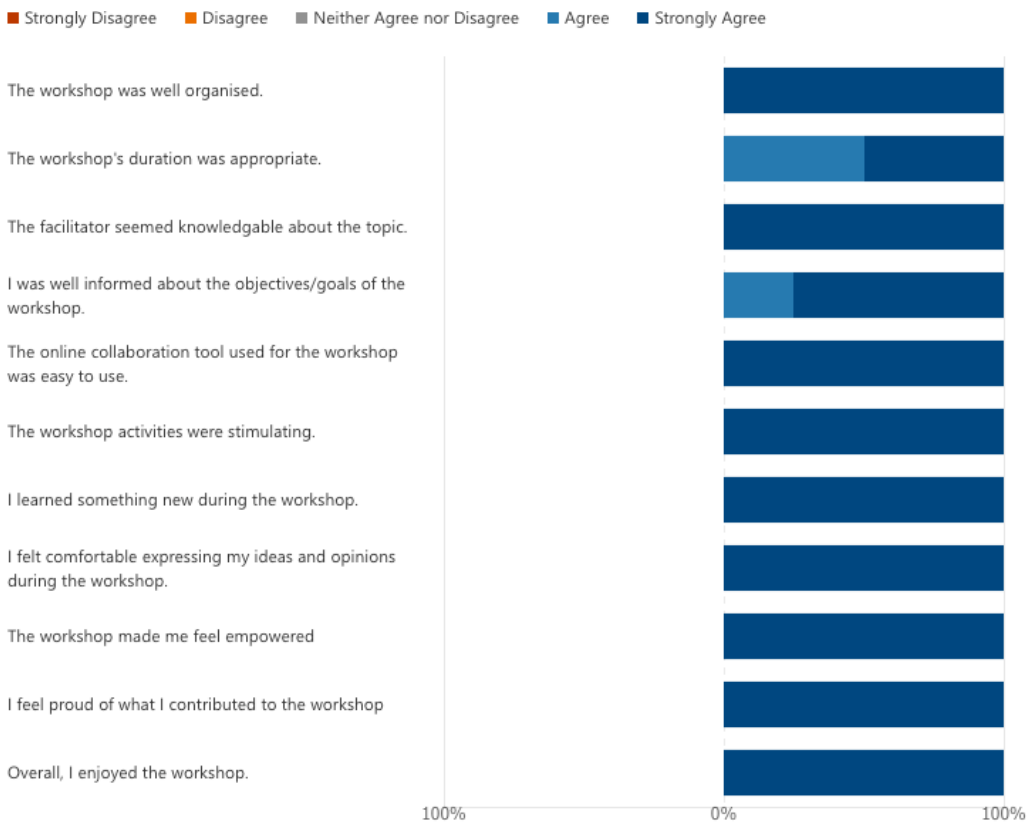
One participant stated that some exercises seemed repetitive. In retrospect, the number of activities could have been reduced to allow more time for each activity. Although the workshop was due to last only 1 hour, it ended up lasting 2 hours due to some exercises taking longer than expected, and lengthy discussions after some exercises. Participants commented that they would have liked to have spent more time on the final few activities which were rushed due to time constraints.

LIMITATIONS

There was a lack of diversity of age ranges, geographical locations, and levels of solo travel experience of participants in the workshop, despite an attempt to recruit a diverse group of participants. Of the 7 women confirmed to participate, 2 cancelled an hour before workshop (from IE, age 34-45 and UK, age 18-24) and 1 (from USA, age 34-45) was a no-show. This left only 4 participants present for the workshop: 2 from IE and 2 from USA, all in the 25-34 age range, 3 of whom had travelled solo before and one who had not.

CONCLUSION

Participation is a key element of empowerment [16]. Participatory design is an effective way to put the power in the users’ hands and allow them to decide how a HCI product or service could work best for them to add value to their life [30]. As evidenced through this pictorial, a co-design workshop proved a powerful tool in giving users direct control over what features, structure, layout, design, and even colours they want to see in an app for female solo travellers, ultimately leading to them feeling proud, excited, and empowered.



Summary of feedback received from a post-workshop survey. Participants were asked to rate 11 statements from ‘Strongly Disagree’ to ‘Strongly Agree’ (above), detail what they liked about the workshop (right) and what they think could have been improved about the workshop (below).

Some activities seemed repetitive but as well they each interlinked with each other.

I only wish I could've stayed longer! Very impressed with it and really got me thinking about solo travel and the challenges I've experienced.

Would have loved longer to discuss the look & feel of the app but we ran out of time!

Not too much for improvement but I think it would be even more amazing in person when the times allow!

I enjoyed the discussions we had after each activity and hearing about what other participants said. It was great listening to different ideas and opinions.

The collaboration tool used and the brainstorm activities planned were fabulous. The activities greatly helped to facilitate discussion and got my mind thinking about the different issues in a new way. Really impressed with the format and Sara's ability to direct the group and encourage responses.

Sara was really well organised and you could tell put in a lot of effort and thought into each exercise. She made people feel really comfortable opening up about their ideas around safety and empowerment. Overall I really enjoyed it, it felt good to be part of something I think could change the way women travel.

I loved meeting new friends and collaborating on ideas! Seeing how our thoughts were similar and different was really interesting

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