



Smart Cities for Women's Safety: How Feminist solution should look like for different cities around the world

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Problem

- 1 in 3 women experience abuse [UN News]
- Cities are a big problem [UN Women]
- Technology can help women to feel safer in the city [Chang 2019]
- Many current technologies do not help with the problem [Kaur et.al 2017] [Kurasala et.al 2022]



Research Question

- What is common and what is different in the expectations from the Smart City technology in regard of safety from women around the world?



Feminism and Technology

Feminist HCI Qualities [Bardzell 2010]:

- Participation
- Advocacy
- Ecology
- Embodiment
- Self-Disclosure
- Pluralism



Co-Design Method

Get to know each other

Introduce yourself

- What is your name? (How should we call you? And what are your pronouns?)
- How long do you live in your city?
- Where you used to live?
- What is your favourite activity?

Check-in

- Do you have any unanswered questions about the study?
- What are your expectations for today's meeting?
- What are your fears?



Problem Definition

What are the situations when you felt unsafe or went through a real danger?
Use Sticky Notes and feel free to add pictures from google to the board :)

Situation:
Place:
Discomfort/fear:

Situation: I am alone and I hear catcalling towards me
Place: near the market by underground station
Discomfort/fear: I don't know intentions of those men who are physically stronger than me



Scenario

BREAK :)
Go get yourself some tea



Solution ideas

Solution Concept

Participants and Cities

- Women or born as female and presenting/being perceived as women
- 18 year old or older
- Lived in the city for 1 year (moved less than 3 month ago)

8 focus groups with 2 participants

- 3+ million citizens
- Rated in the Smart City Index 2021

#19 Melbourne

#50 Berlin

#104 Cairo



Analysis

The screenshot displays the MAXQDA Analytics Pro 2022 (Release 22.2.0) interface. The top menu bar includes Home, Import, Codes, Memos, Variables, Analysis, Mixed Methods, Visual Tools, Reports, MAXDictio, Stats, and TeamCloud. Below the menu is a toolbar with icons for New Project, Open Project, Reset Activations, Document System, Code System, Document Browser, Retrieved Segments, Logbook, Teamwork, Merge Projects, Save Project As, Save Anonymized Project As, Project from Activated Documents, External Files, and Archive Data.

The main workspace is divided into three panes:

- Document System:** A hierarchical tree view showing the project structure. It includes folders for Documents (Berlin, B1, B2, B3), Code System (Problems, Context, Safety Strategies, Solutions, Sets), and Focus Group Speakers. The right side of this pane shows a list of documents with their respective paragraph counts.
- Document Browser:** A pane showing the content of a selected document, B1 (395 Paragraphs). It displays a list of paragraphs with their starting times and content. The first paragraph is titled "PROBLEMS" and discusses the situation in Berlin. Subsequent paragraphs are labeled with timestamps (00:15:00, 00:20:00) and speaker names (P081, Researcher, P091).
- Retrieved Segments:** A pane at the bottom showing the results of a search query. It includes a search bar and a list of retrieved segments, with a total count of 2741 segments.

The bottom status bar shows the current coding query: "Simple Coding Query (OR combination of codes)".

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Analysis: Coding

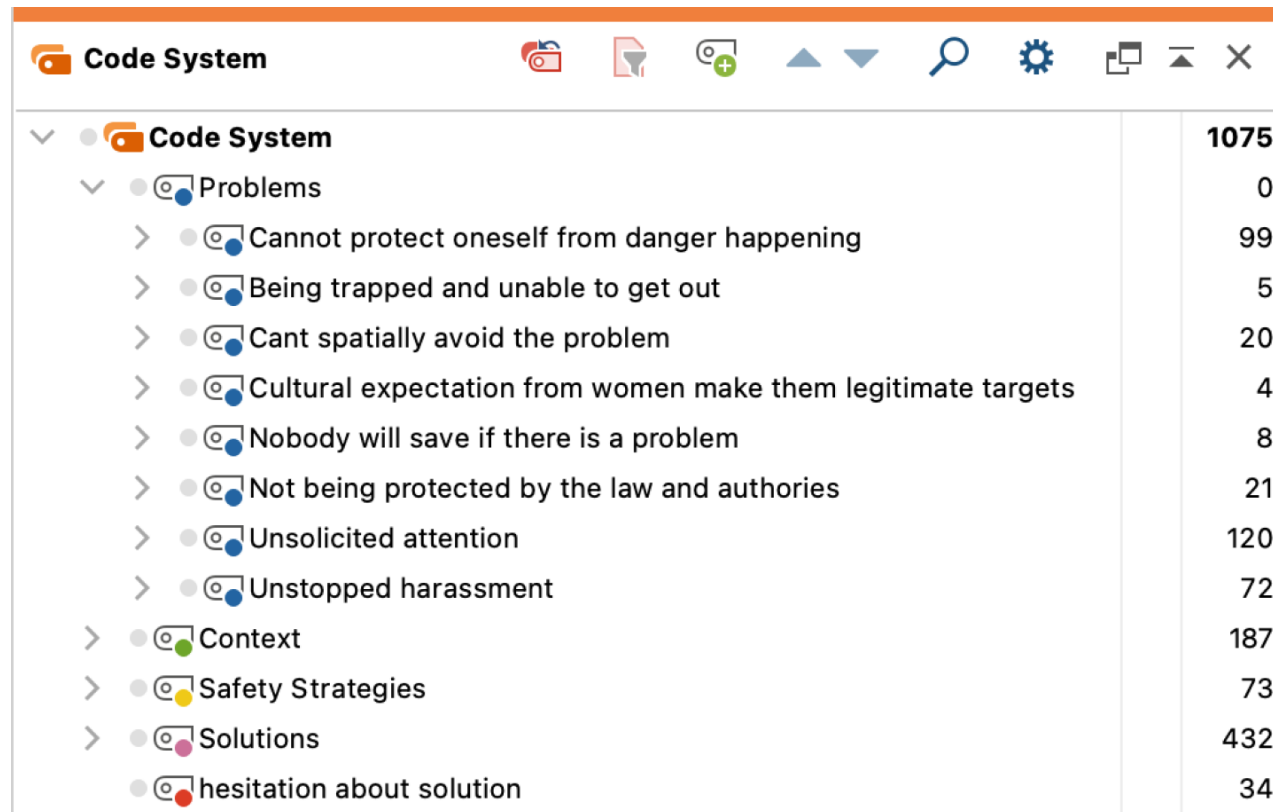
Code System			
Code System			1075
> Problems			349
> Context			187
> Safety Strategies			73
> Solutions			432
hesitation about solution			34

..Beggars -problem	53	P091: No, I was thinking about the situation when like beggars approach you and asking for some money and I usually try to avoid it and I was successful avoiding it. So I was I wasn't able to figure out like what is my problem because I just need to go away. but reading this card, I realized that they usually not usually but they can also react on Your answer like in a bad way like studying or I don't know just give you a bad name or something.
..Spatially avoiding the danger		
.Beggars - Reacting to the answer in unpleasant waty		
	54	Researcher: You can write it down while P081 read and explains hers.
..Underground	55	P081: Yeah, this actually I was with my boyfriend in that situation. So, we were riding the tube and That was this guy coming to us asking for money? And he's really worn down and like walking on a stick and really smelled really bad was it was really weird. And we said like, No, thank you. Like we don't have any money And then he really started shouting and screaming at us and not in a normal way. Just calling us something. But he really from the bottom of his heart, he just directly screamed at us and came directly to our faces. And I.
..In the situation with the boyfriend		
..Beggars -problem		
..Beggars -problem		
..shouting at		
..Beggars - Reacting to the answer in unpleasant waty		
	56	Researcher: oh,
	57	P081: Yeah, and I really, I really was just like doing nothing just in shock.



Analysis: Themes

- MAXQDA Tools: Open Coding + Creative Coding



The screenshot shows the 'Code System' window in MAXQDA. It displays a hierarchical tree of codes. The root node is 'Code System' with a frequency of 1075. It has several sub-nodes: 'Problems' (0), 'Context' (187), 'Safety Strategies' (73), 'Solutions' (432), and 'hesitation about solution' (34). The 'Problems' node is expanded, showing a list of specific codes with their frequencies: 'Cannot protect oneself from danger happening' (99), 'Being trapped and unable to get out' (5), 'Cant spatially avoid the problem' (20), 'Cultural expectation from women make them legitimate targets' (4), 'Nobody will save if there is a problem' (8), 'Not being protected by the law and authorities' (21), 'Unsolicited attention' (120), and 'Unstopped harassment' (72).

Code System	Frequency
Code System	1075
Problems	0
Cannot protect oneself from danger happening	99
Being trapped and unable to get out	5
Cant spatially avoid the problem	20
Cultural expectation from women make them legitimate targets	4
Nobody will save if there is a problem	8
Not being protected by the law and authorities	21
Unsolicited attention	120
Unstopped harassment	72
Context	187
Safety Strategies	73
Solutions	432
hesitation about solution	34



Results Outline






- Patterns in Data
- Comparison of the Cities
- Feminist Smart City Solutions Requirements

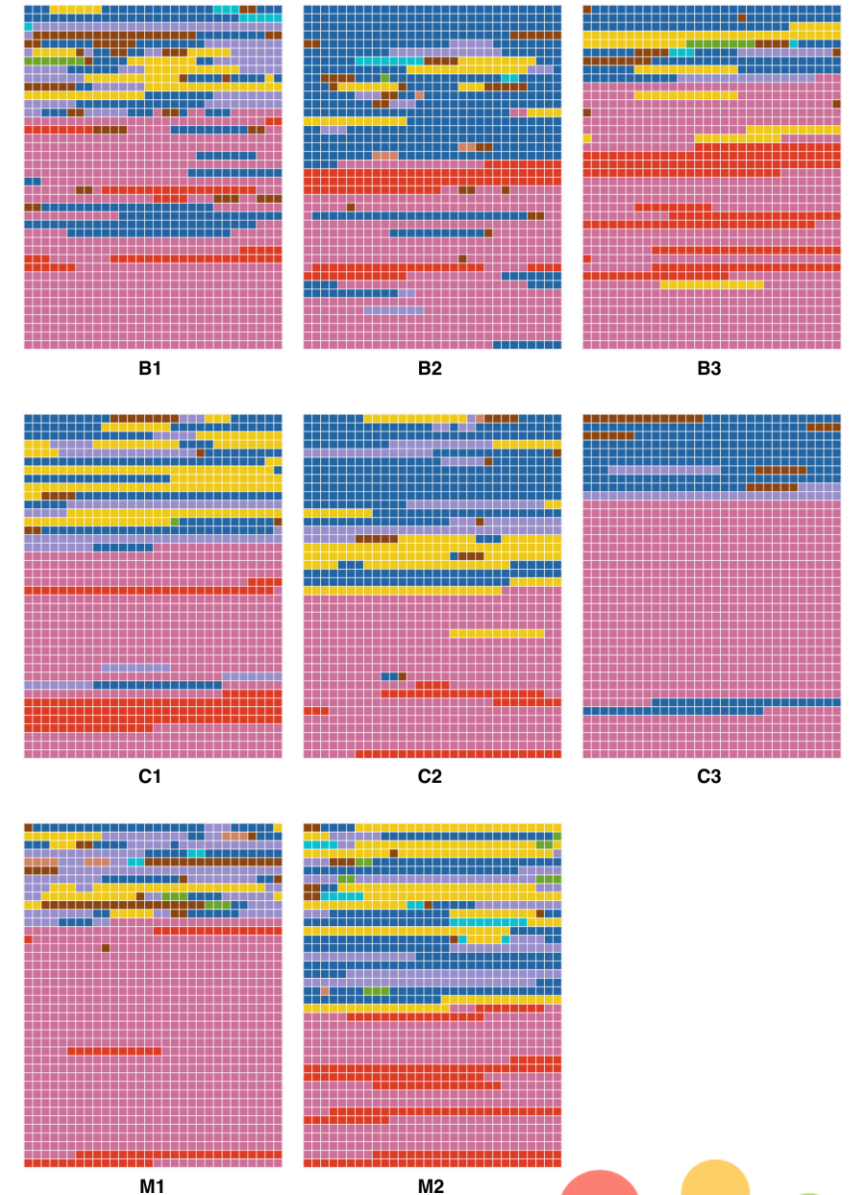


Patterns in Data

- Codes are similarly distributed
- Level of participation influences the data

MAXQDA Tools: Matrix + Visualisation

Code System	B1	B2	B3	C1	C2	C3	M1	M2
>  Problems	68	59	18	36	55	15	61	37
>  Context	35	36	15	13	13	7	37	31
>  Safety Strategies	8	4	6	16	11		15	13
>  Solutions	110	53	47	37	41	20	88	36
>  hesitation about solution	7	4	5	4	4		3	7



Patterns in Data

- Most mentioned themes are present for all cities
- Most mentioned problems were chosen to work on
- Themes define each other

MAXQDA Tools: Matrix

Code System	Berlin	Cairo	Melbourne
Problems			
> Cannot protect oneself from danger	39	27	33
> Being trapped and unable to get out	1	2	2
> Can't spatially avoid the problem	12	4	4
> Cultural expectation from women		4	
> Nobody will save if there is a problem	4		4
> Not being protected by the law and	7	13	1
> Unsolicited attention	59	22	39
> Unstopped harassment	23	34	15
> Context	86	33	68
Safety Strategies			
> Avoiding contact	3		2
> Awareness	3	11	12
> Governmental help	1	4	
> Human contact and witnesses	3	5	8
> Verbal reaction to protect	3		1
> Spatially avoiding the danger	5	7	5



Comparison of the Cities

- Problems are similar but context differs
- Biggest problems define strategies and focus of solutions
- Strategies that women use already are similar



• Berlin

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• Melbourne



• Cairo



Feminist Smart City Solutions

- Technological ideas overlap: Alarm Buttons, Tangible technology, Cameras, Tracking....
- Goals and aspects of the solutions depend on context: Culture, Laws, Historical Development, City Layout, Demographics.



Feminist Smart City Solutions:

- Preventive Measures
- Reactive Measures
- System Adjustments
- Reporting Support
- + Local Context



Conclusion

- Safety Smart City Solutions should always include the 4 key factors and acknowledge the local context
- Inclusive Solutions can be created by involving women early on and Feminist HCI Qualities can be a base for it
- Co-Design Method altogether helps to find deep insights on the solutions expectations



Takeaways

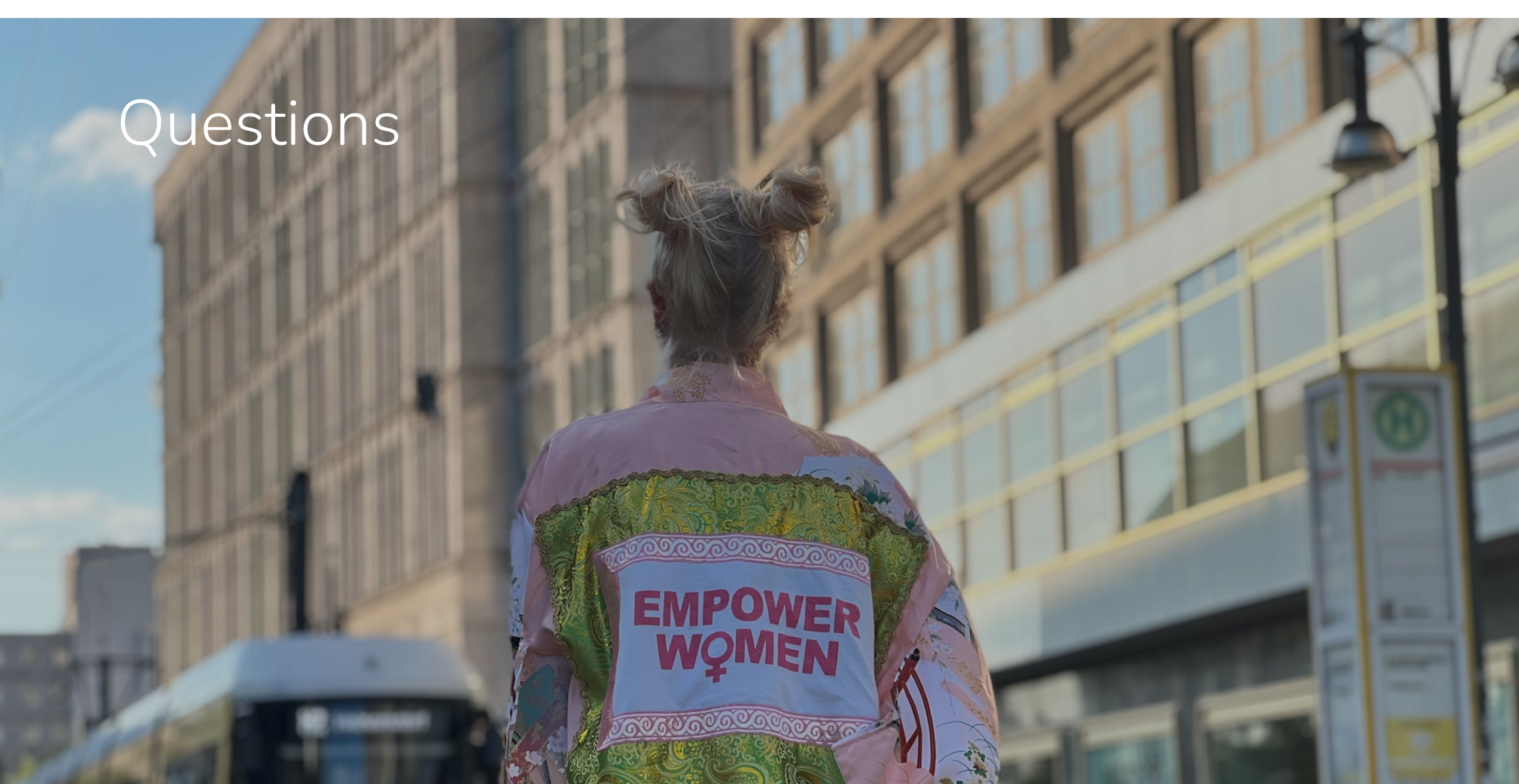
- Qualitative research and creative methods can be hard to carry out and analyse but the results worth it
- Finding out MAXQDA tools for Creative Coding, Data Visualisation and Codes Matrixes allows to work with big and unstructured data
- Working through your codes with different tools and going from high- to low-level of data abstractions opens new perspectives



Feminism in research
is about inclusivity



Questions



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