

Visuo-Locomotive Perception / Experiment Data Analysis

Experiment 1 / Auditory vs No Auditory Aids
Experiment 2 / Auditory + Visual Cues (90° & 60°- 45°)

11 participants

5



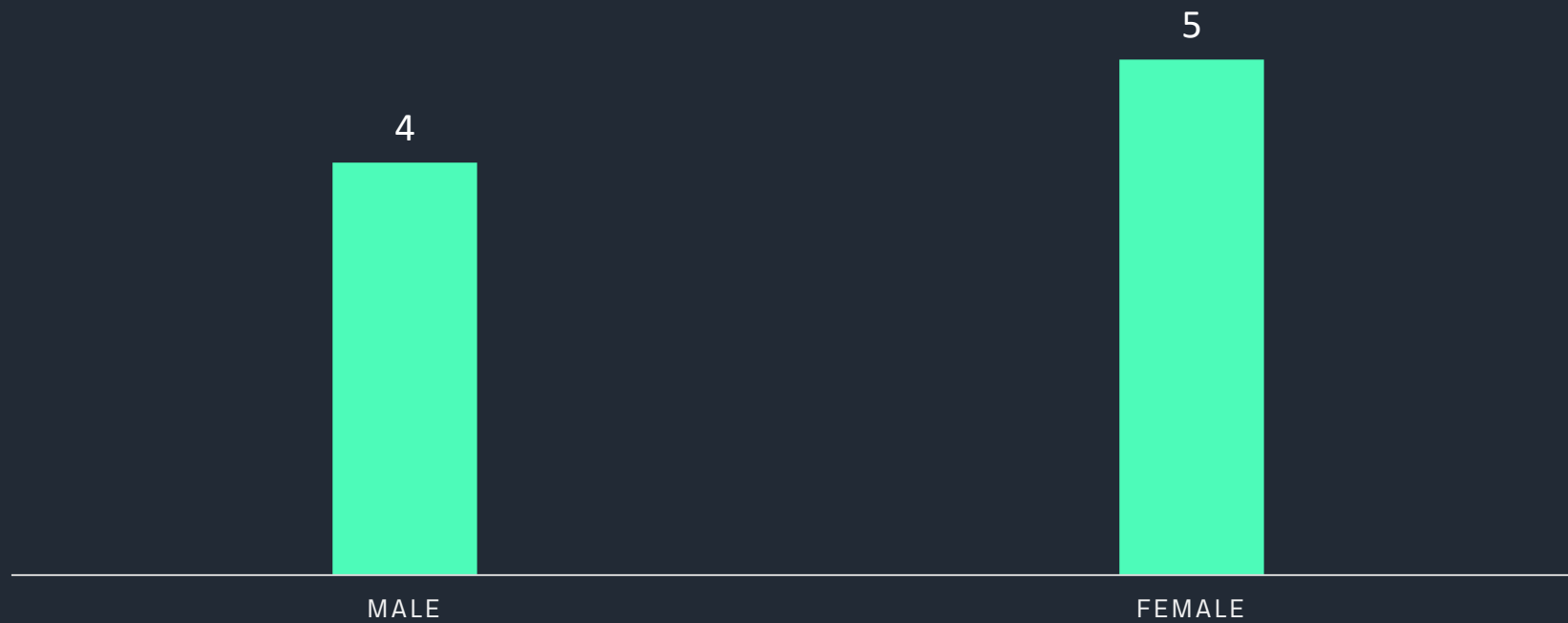
MALE

6

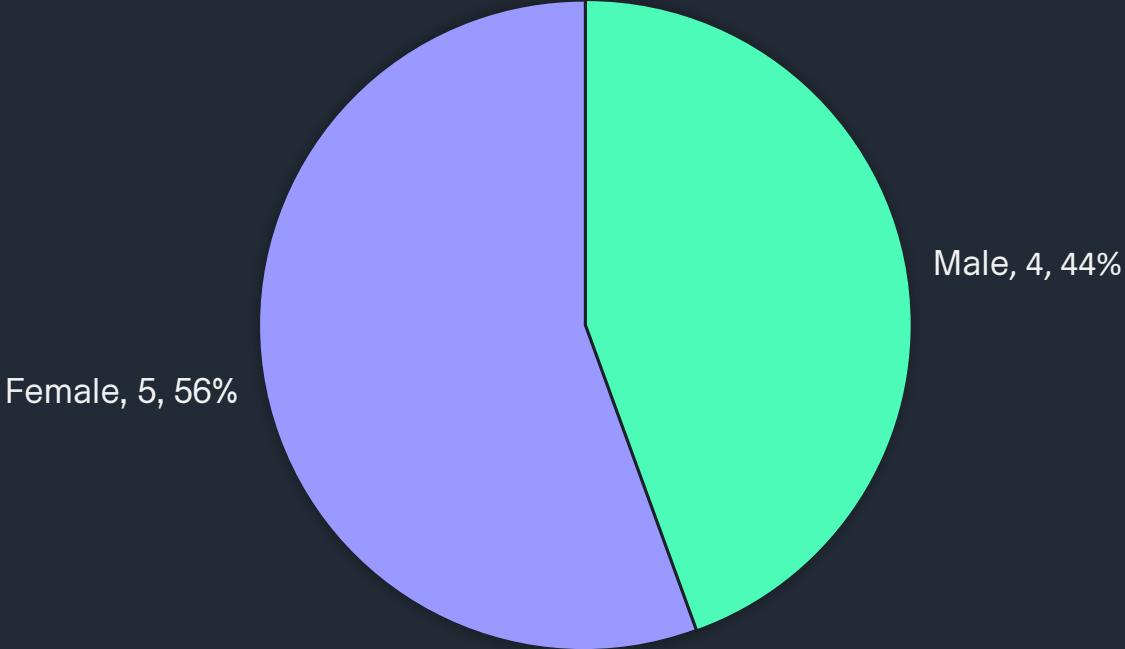


FEMALE

Data of 9 subjects considered as valid



Female / Male Ratio



Age diversity
18 - 70

Experimental Procedure

- 1 . Introduction and general information about wayfinding + orientation task experiment (20-25min)
2. Pre-questionnaire
3. Introduction to VR equipment and its usage – test room play
4. Oral instructions
5. Beginning of the VR experience / experiment
6. 3 orientation tasks during the immersive experience
7. Final point questionnaire
8. Post questionnaire

The degree of using the landmarks affect the navigation performance of a user. It helps in updating the spatial orientation. Participants in virtual loci with the auditory cues should perform better in spatial updates and therefore they should have a better performance in the orientation tasks.

An integration of both auditory and visual cues
could assist in facile wayfinding process.

The way finding performance of participants in the vr environment where landmarks are positioned vertically to the path of a user will be preferable to landmarks situated in an angle between 45° - 60° in relation to the user's path.

Gathered Data /

Orientation Tasks

Screen Recording

External Recording

Pre/Post Questionnaire

Head Tracking 4-dimensional data

Sketch Map

Screen Recordings / Two Floorplans

45° - 60°

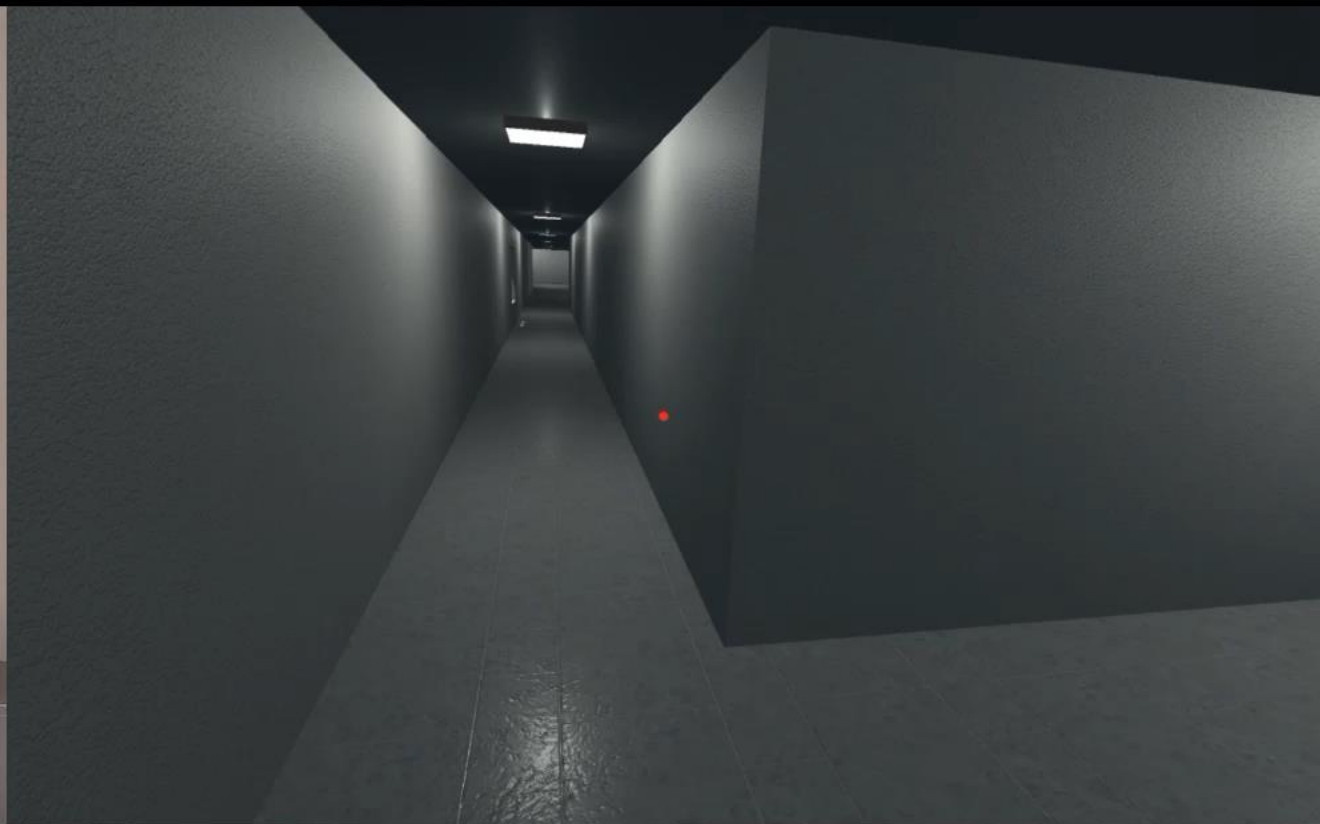


90°



External Recordings / side to side

External Recordings / side to side

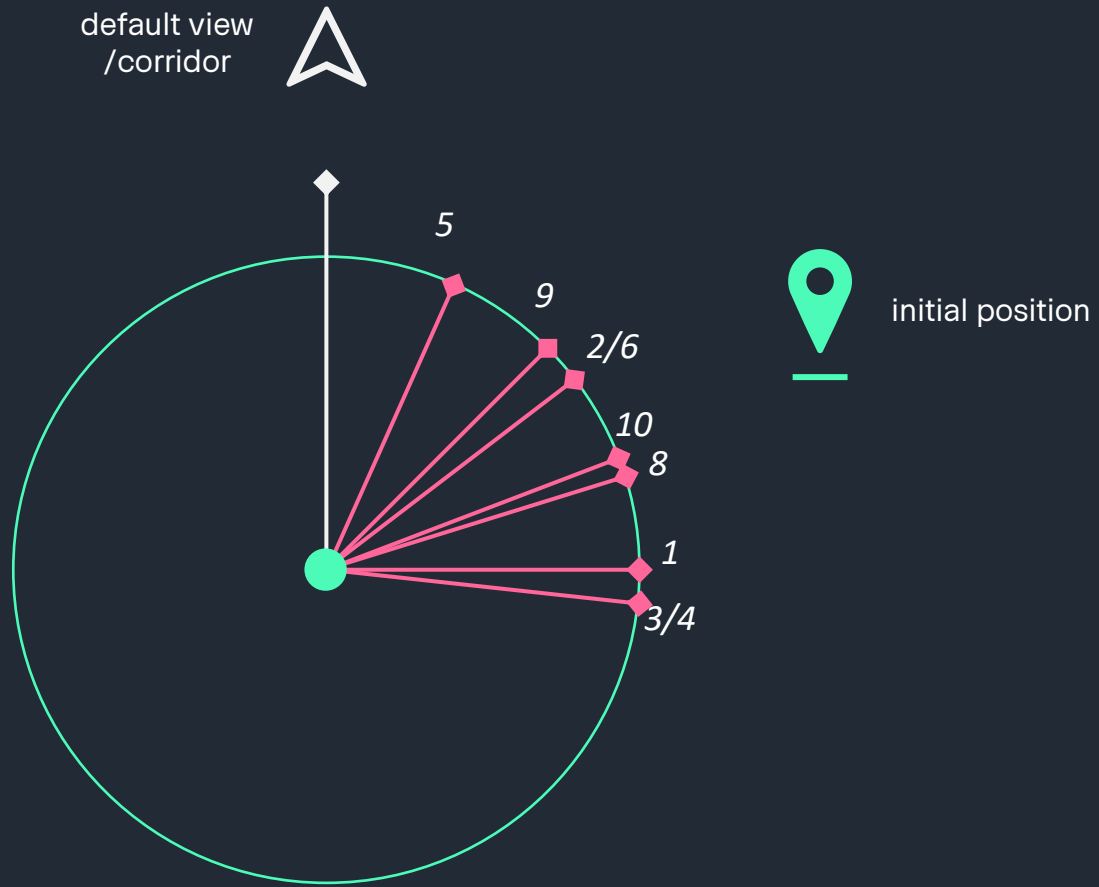


Orientation Tasks/ Visualization

3 orientation tasks asked participants during the virtual reality tour

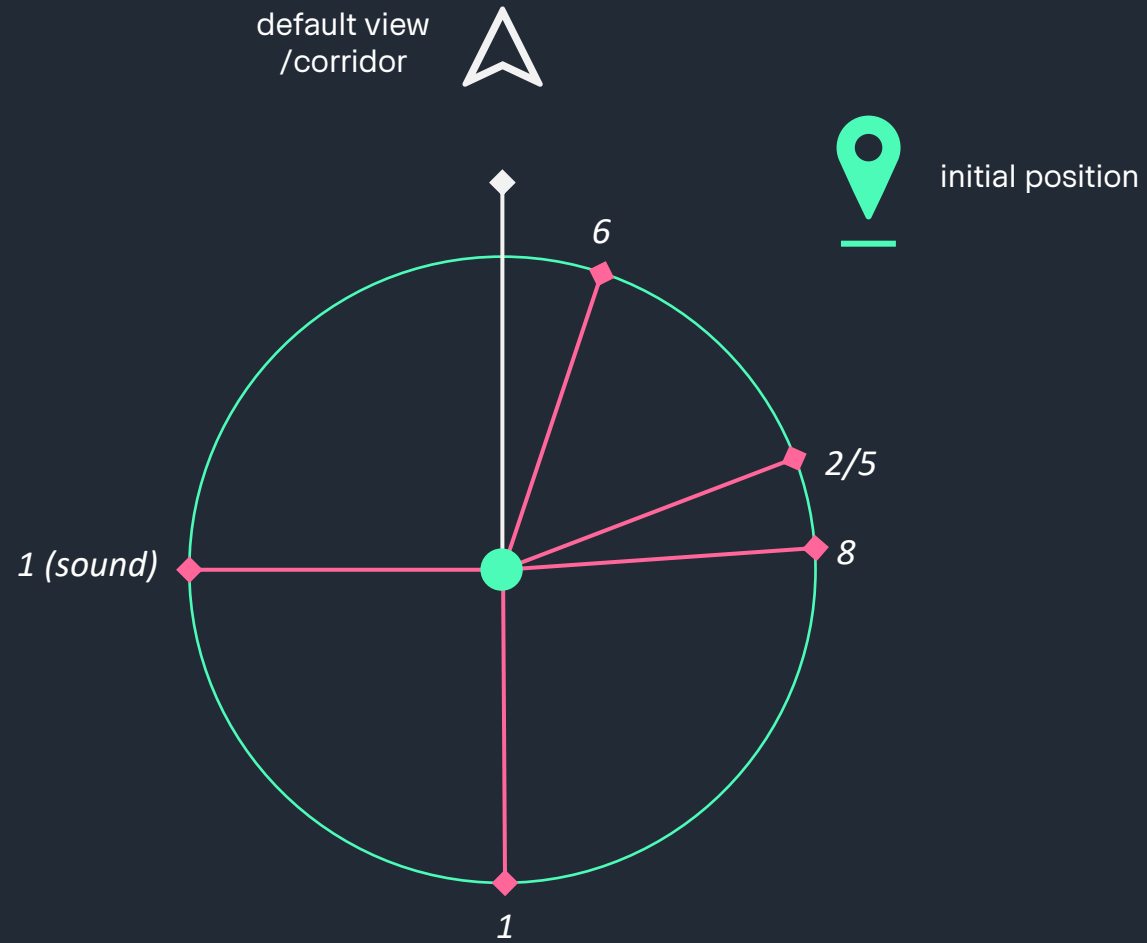
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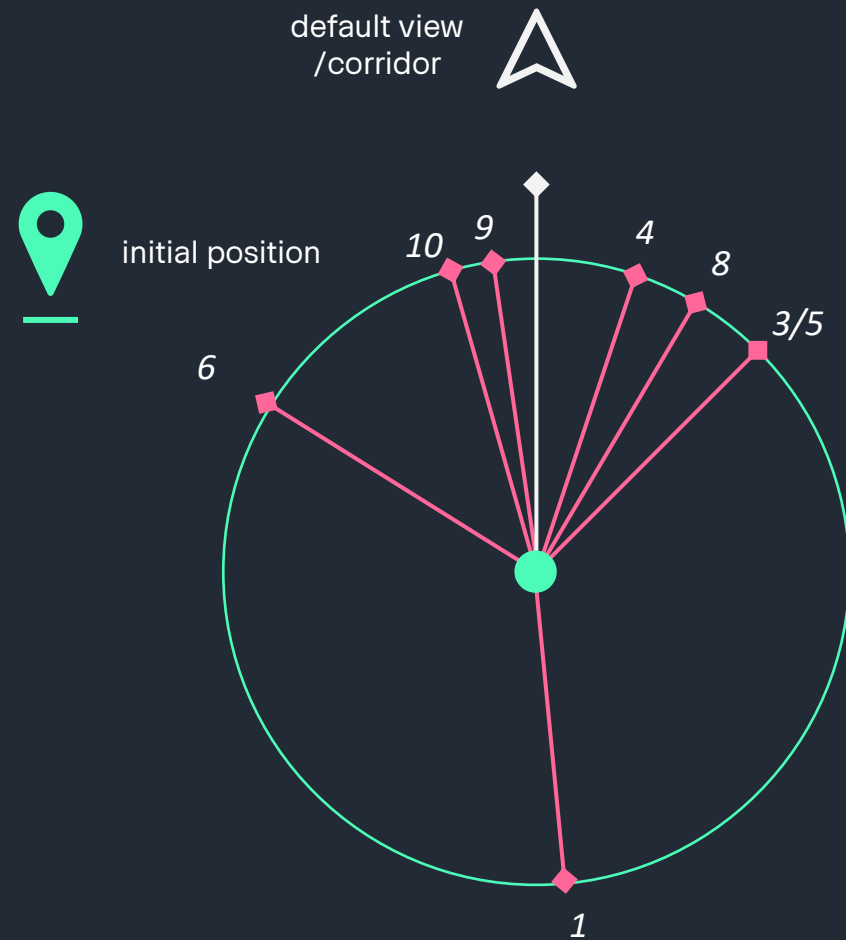
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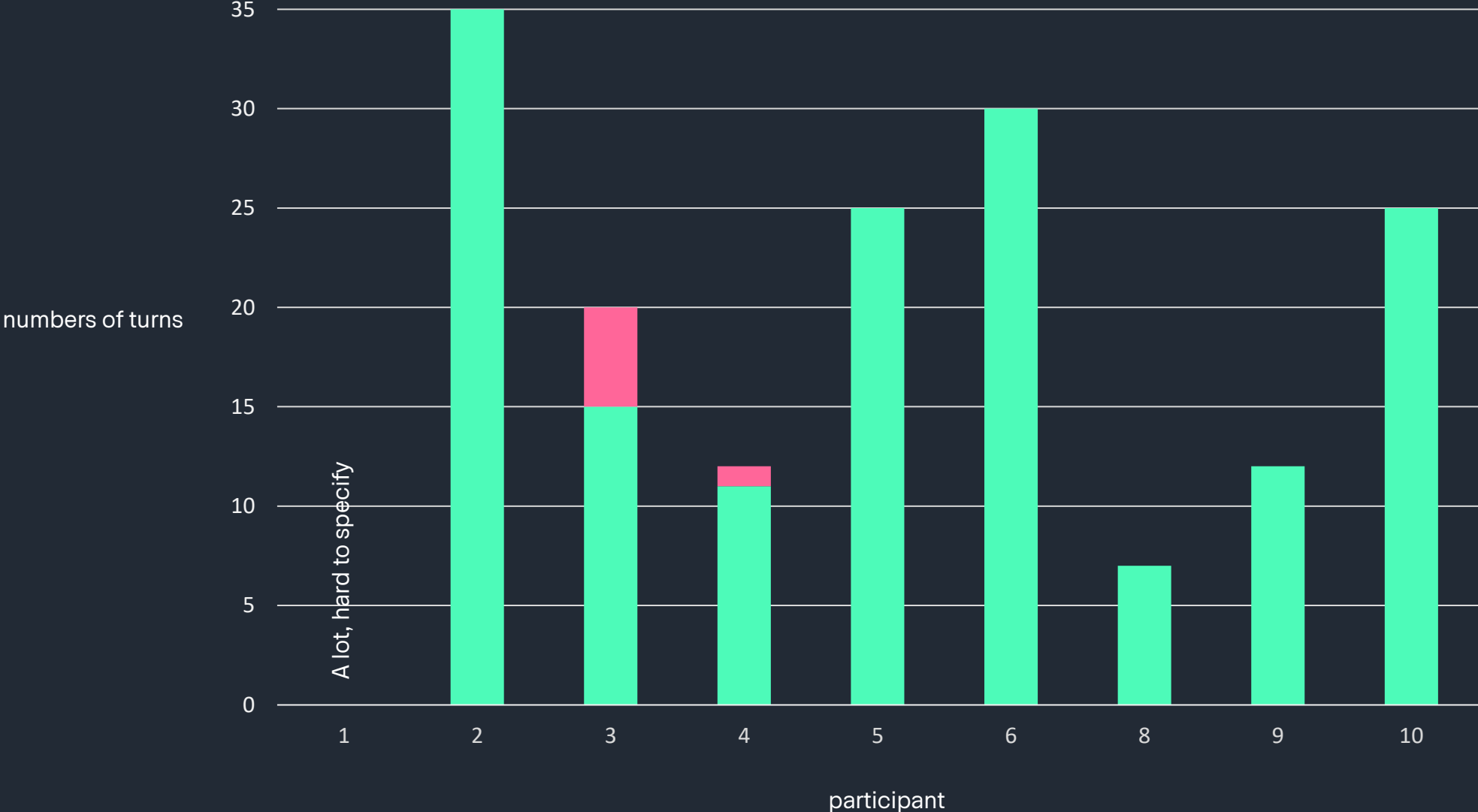
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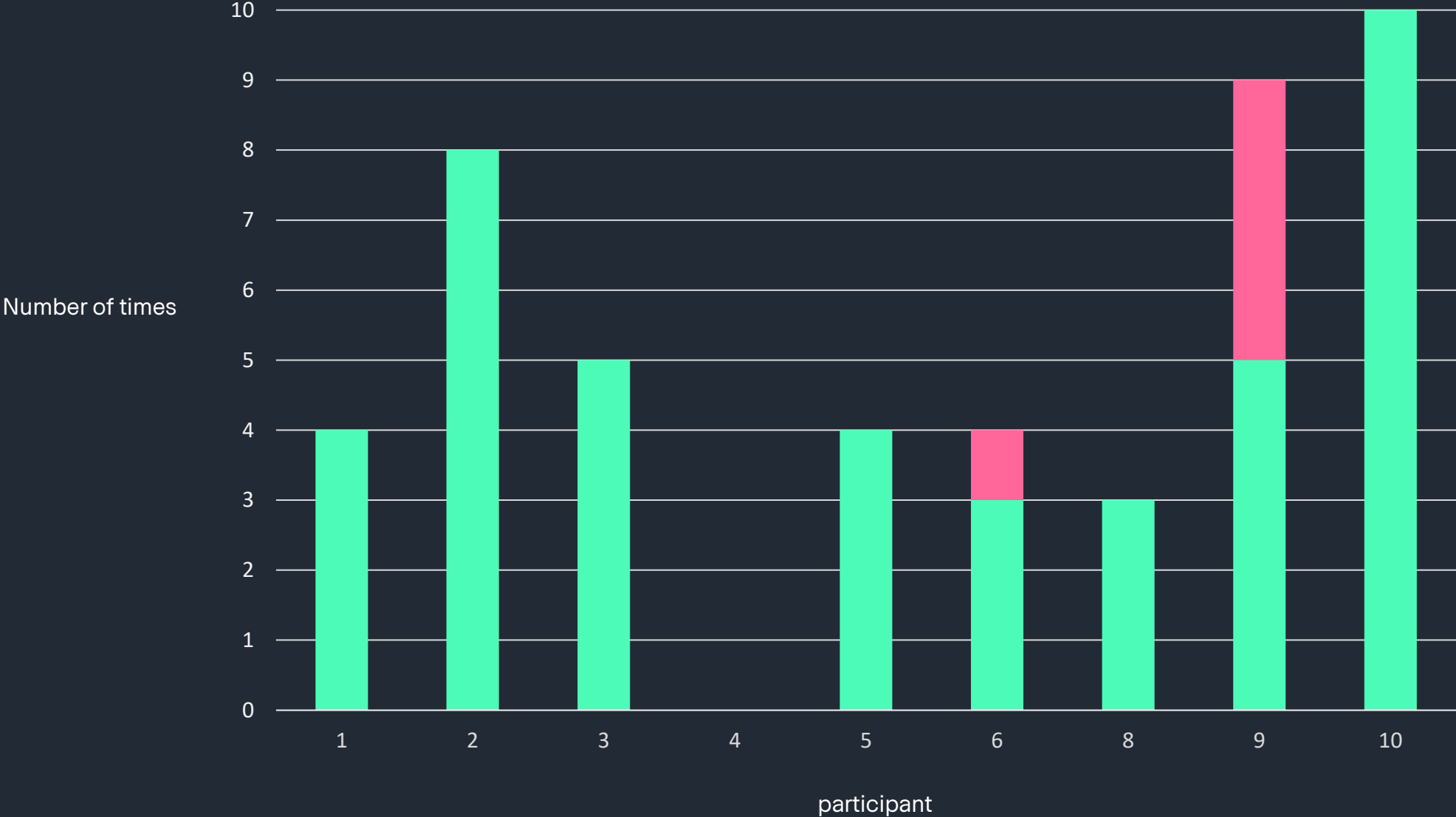


Post-Questionnaire/

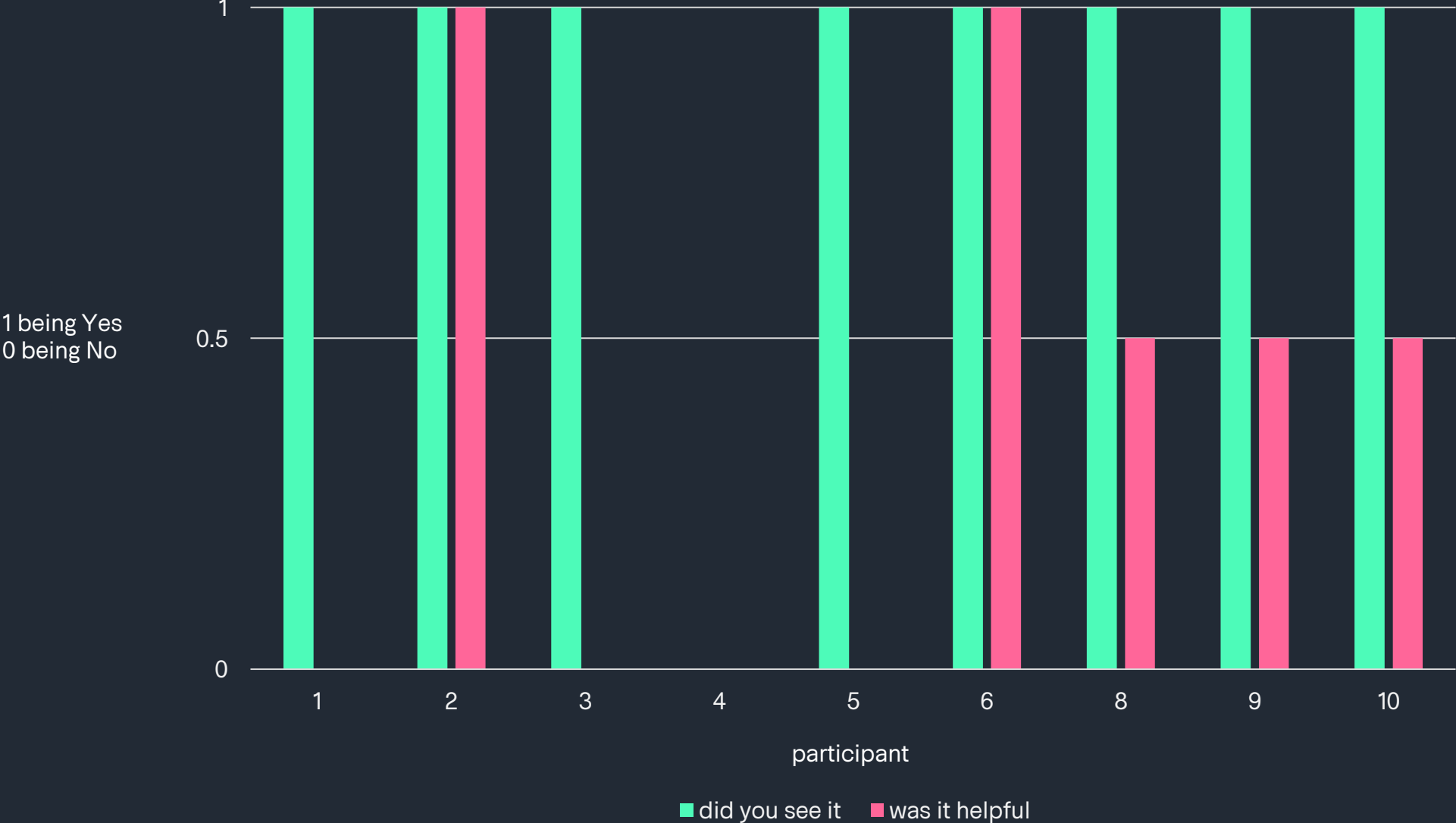
How many turns did you make?



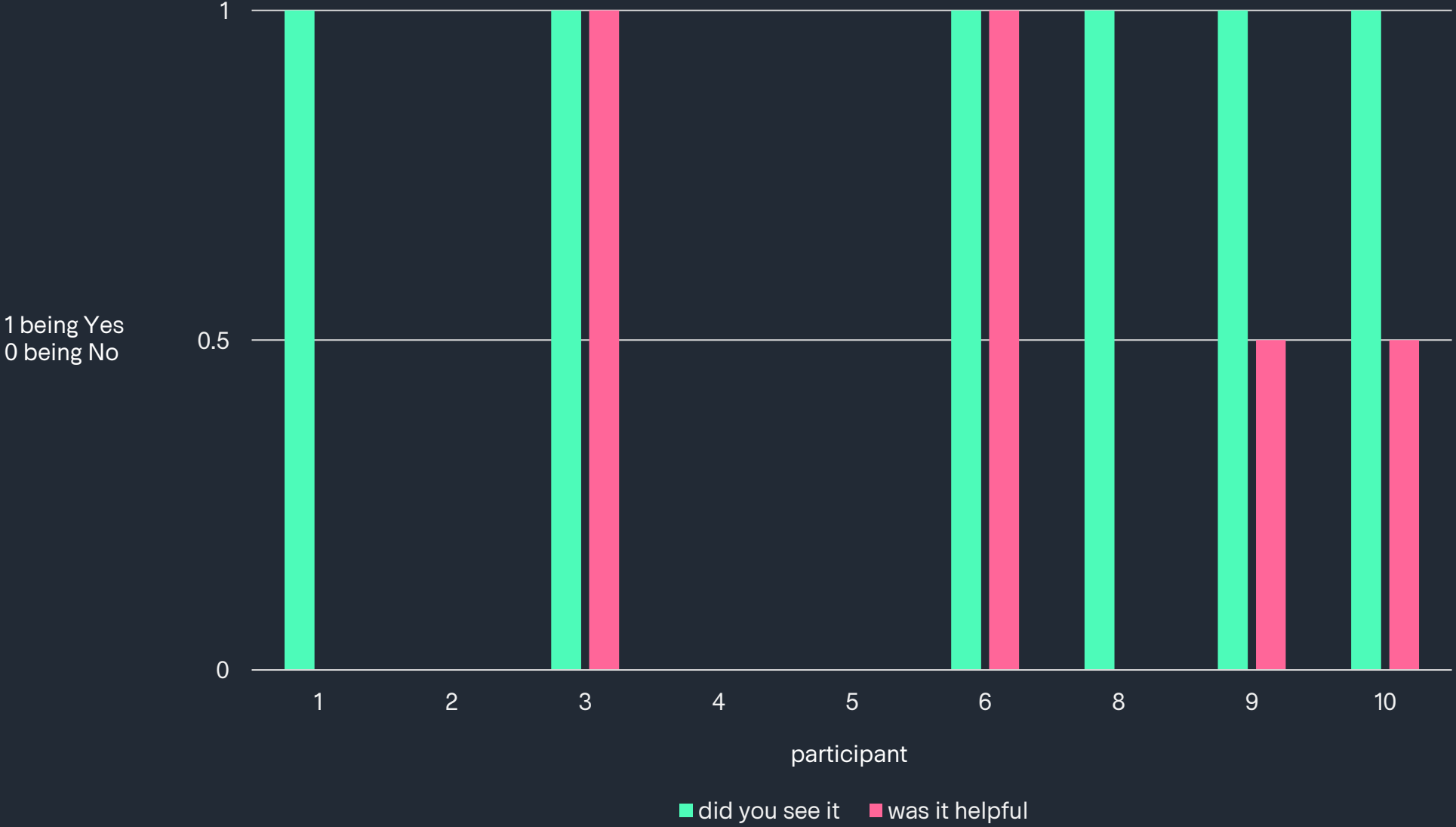
How many times did you see green elevators?



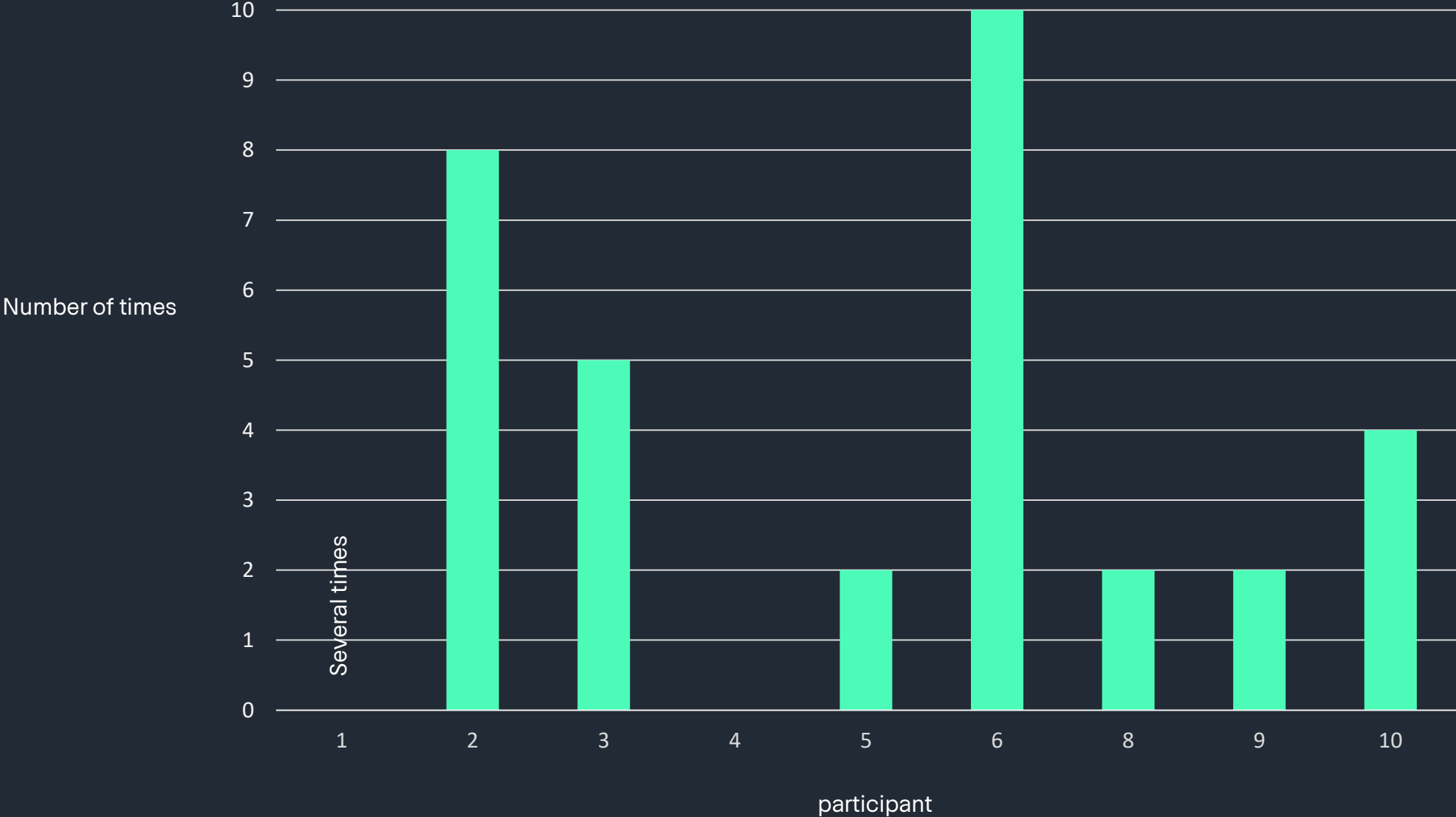
Did you see green elevators? Was it helpful?



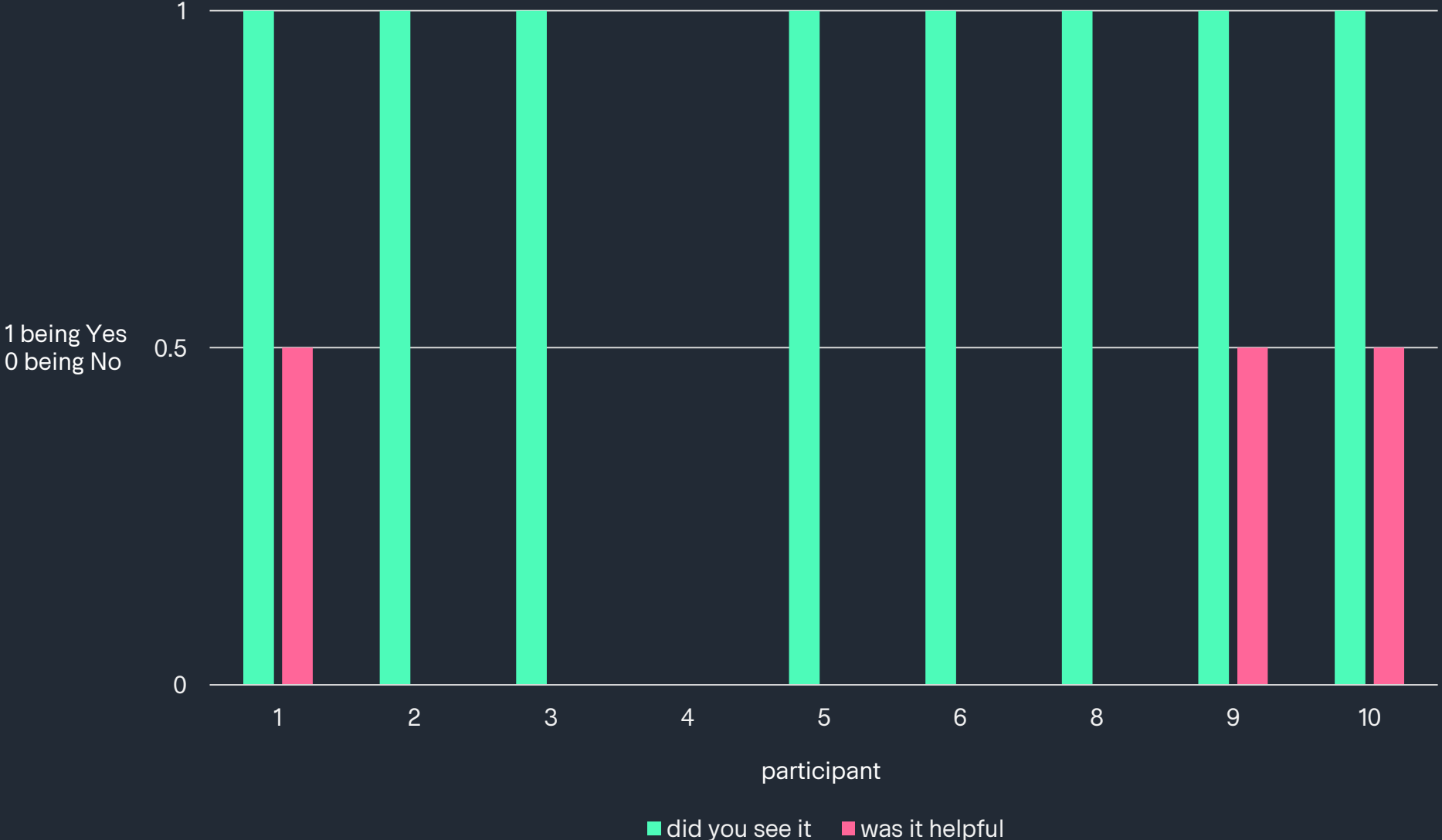
Did you hear the sound of green elevators? Was it helpful?



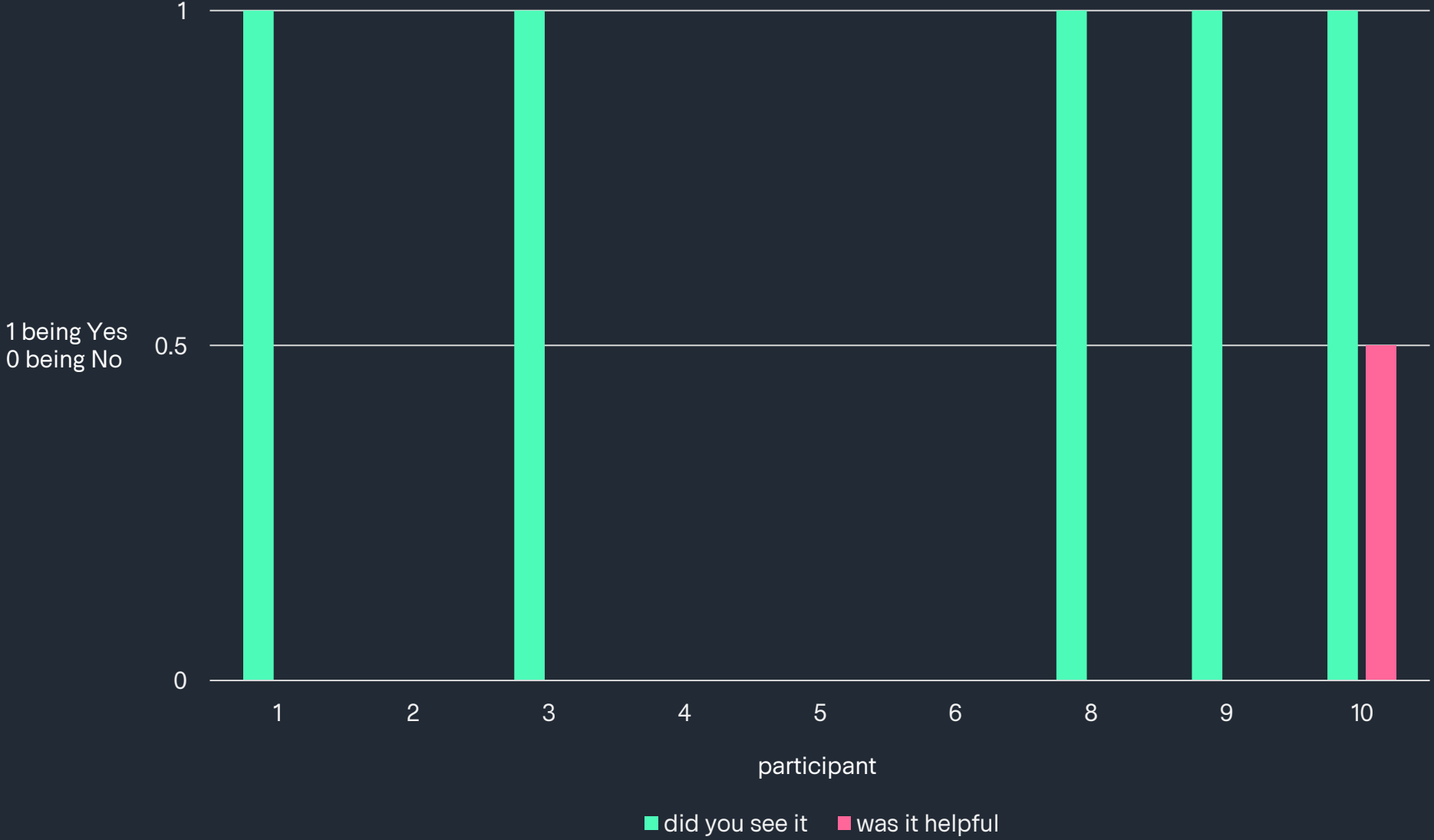
How many times did you see the highway?



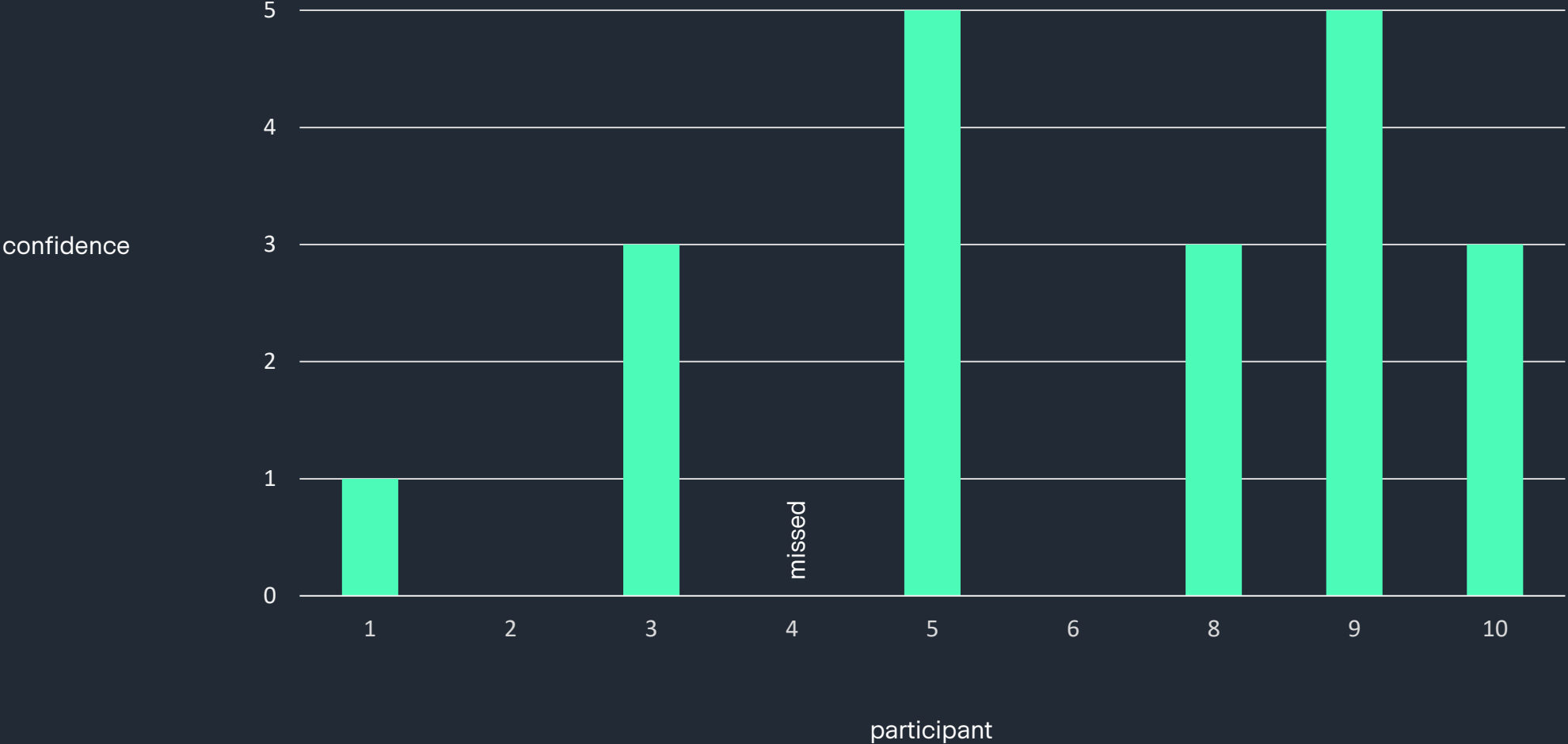
Did you hear the highway bridge? Was it helpful?



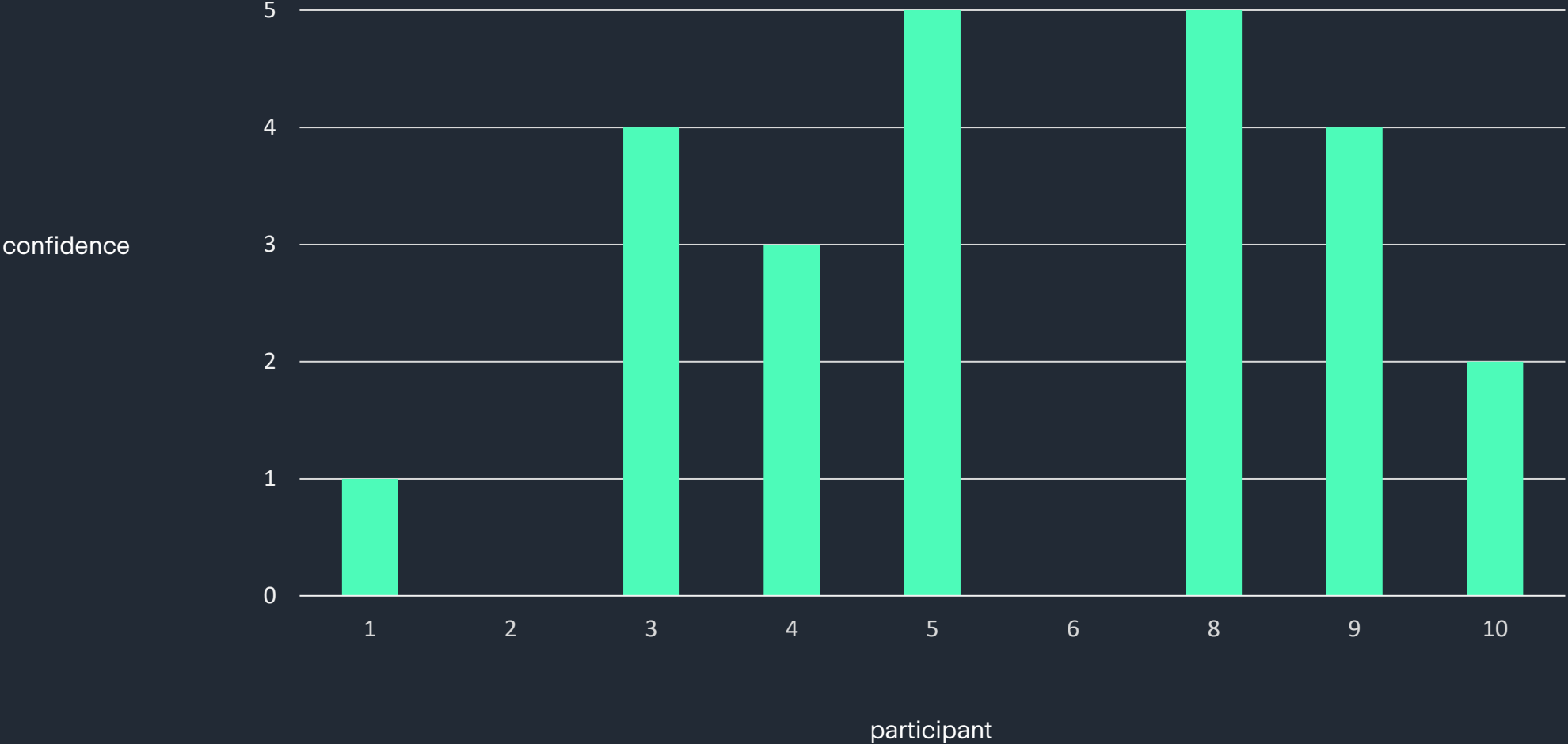
Did you hear the church? Was it helpful?



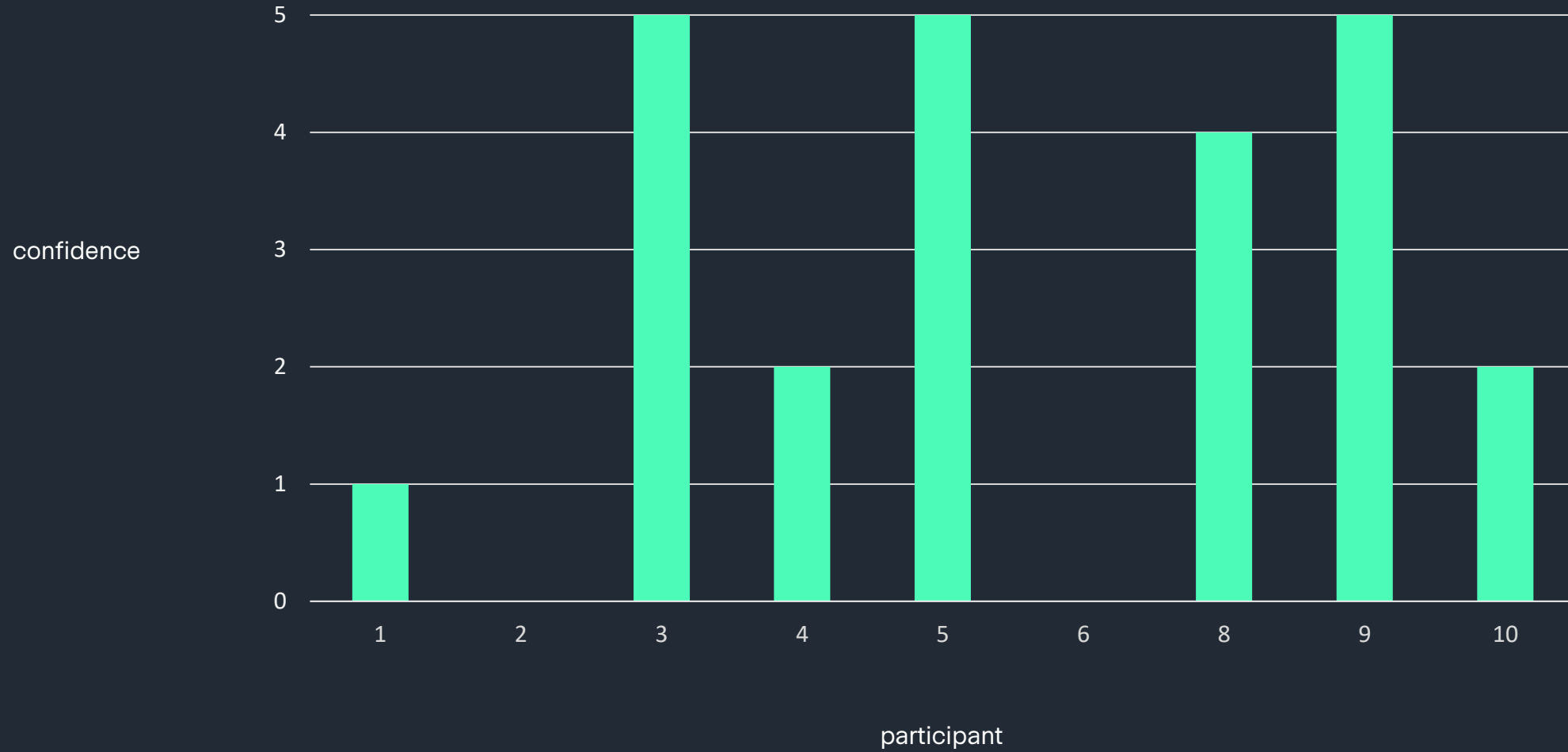
Direction of the elevators. How confident are you? (1-5)



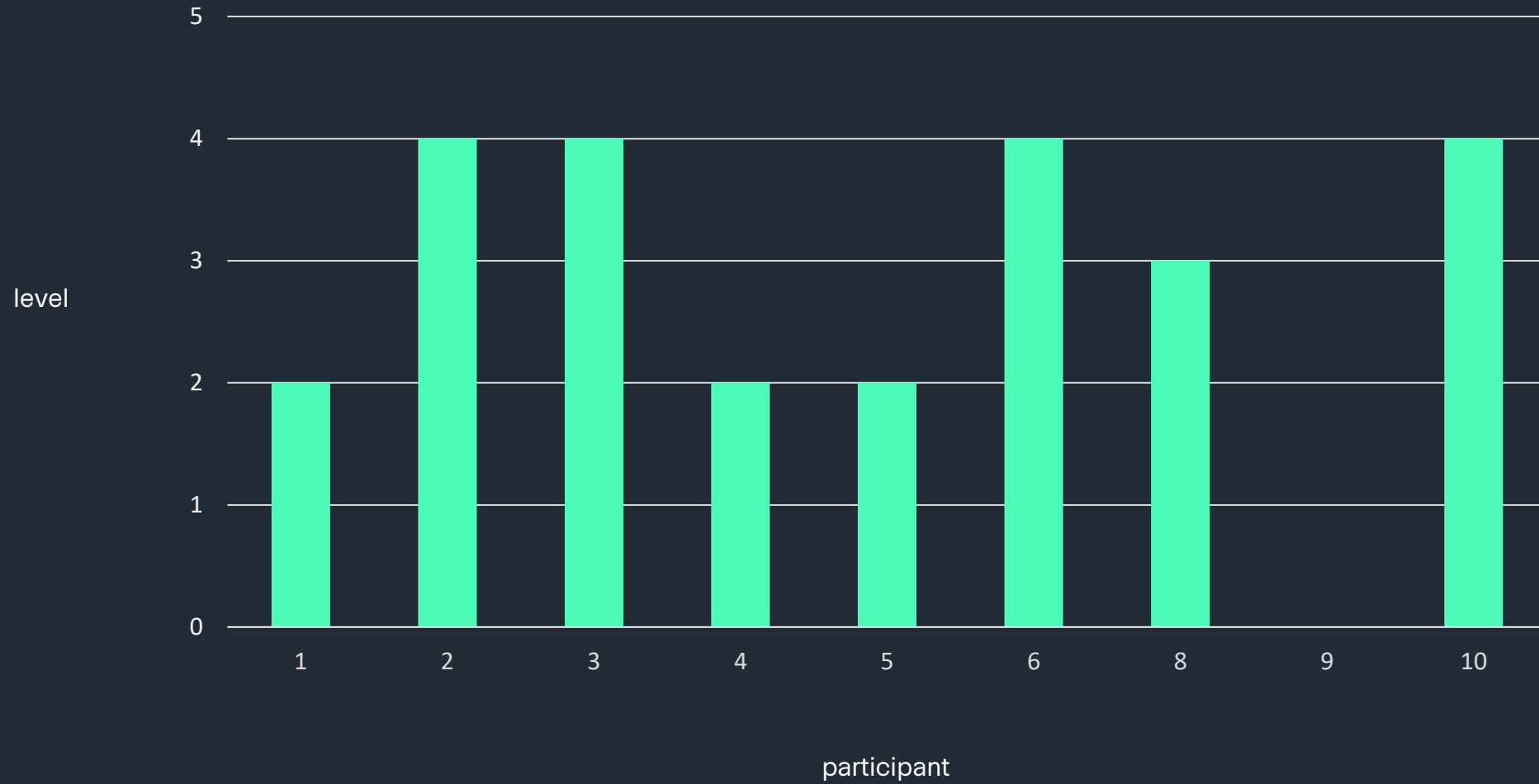
Direction of the church. How confident are you? (1-5)



Direction of the starting point. How confident are you? (1-5)



Was the task hard, kind of hard, not so easy or easy? (1-4)



Sketch Maps/

Head Tracking Data / Visualization

7.72 (-13.665, 1.040, -19.720) (.000, .713, .000, -.701)

Orientation Tasks / Limitations

- Participants may have understood a corridor direction towards the starting point
- Sound was distracting and confusing for some participants
- Cable tangled around may have disrupted the orientation

Oral Instructions / Limitations

majority of participants found oral instructions overloading their memory.

- Information hard to process or understand
- Too many instructions regarding the visual cues as well as the path to be made
- Oral instructions were not clear to all participants - examiner's recitation
- Participants asked for oral instruction repetition during the experimental task
- Indication of the signage led to confusion during the walk

Floorplan layout / Limitations

- Some participants could not find their way. 2 subjects did not complete their tasks successfully.
- Signage was misleading
- 3d elements were out of scale
- “abandoned hospital”
- Floorplans should vary
- Higher level of details

Future Application / Development

- 3d sound exploration – sound acoustics
- Immersive spaces
- Games
- Architecture prototyping