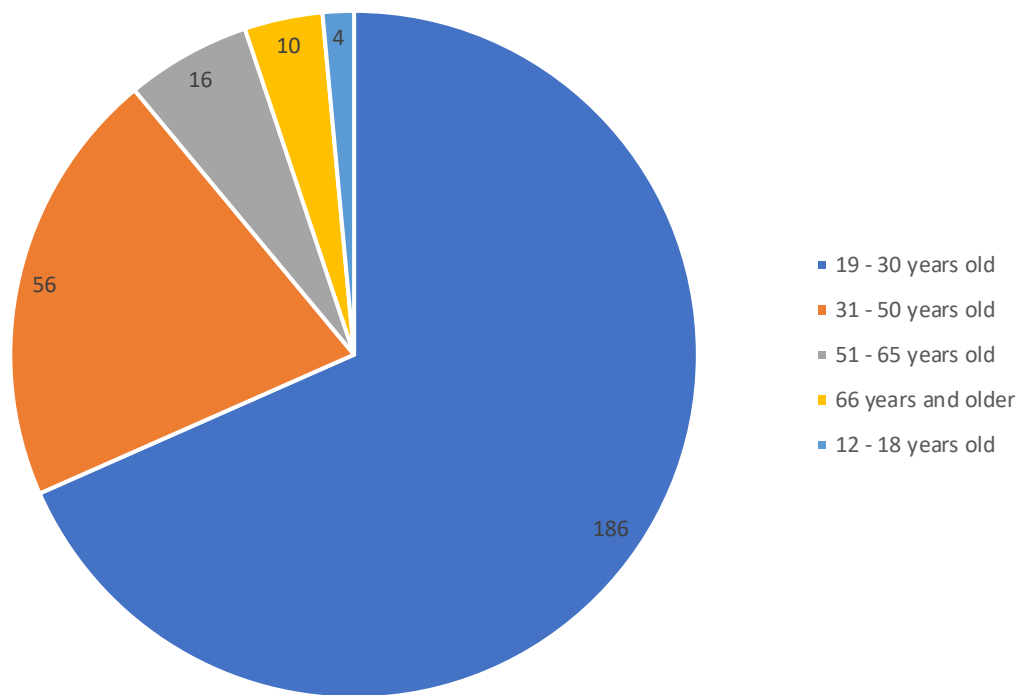


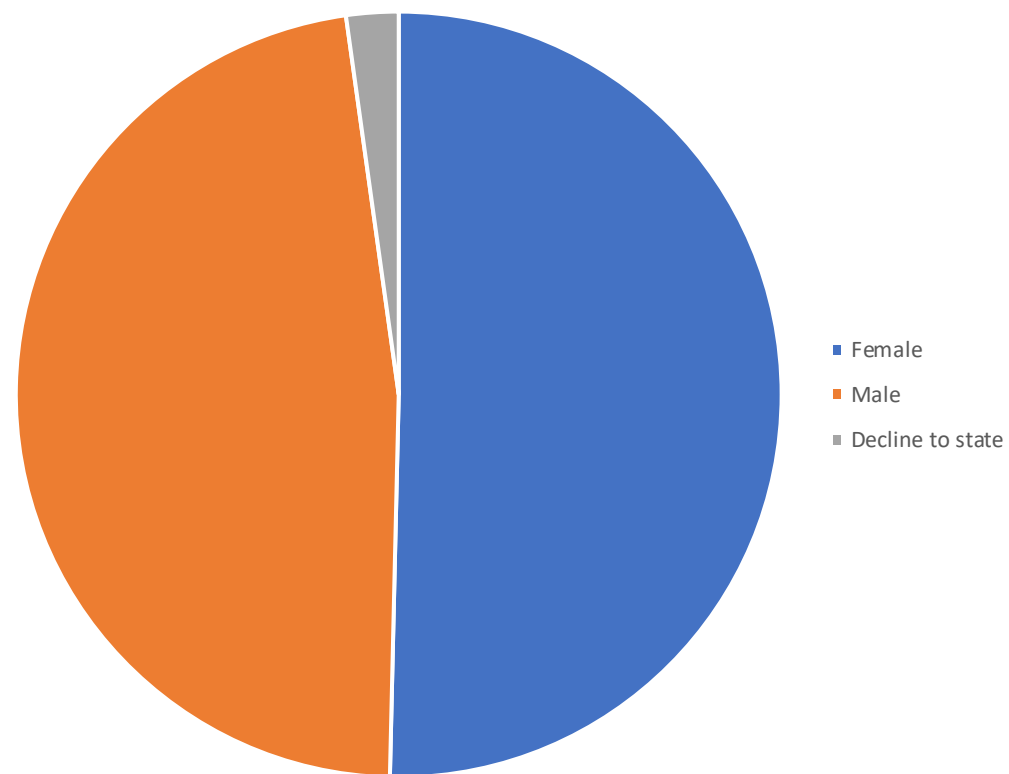
Online Survey on Effect of Graphical
Messages for Communication between
Self-driving Mobilities and People
(Singapore)

Respondents (272)

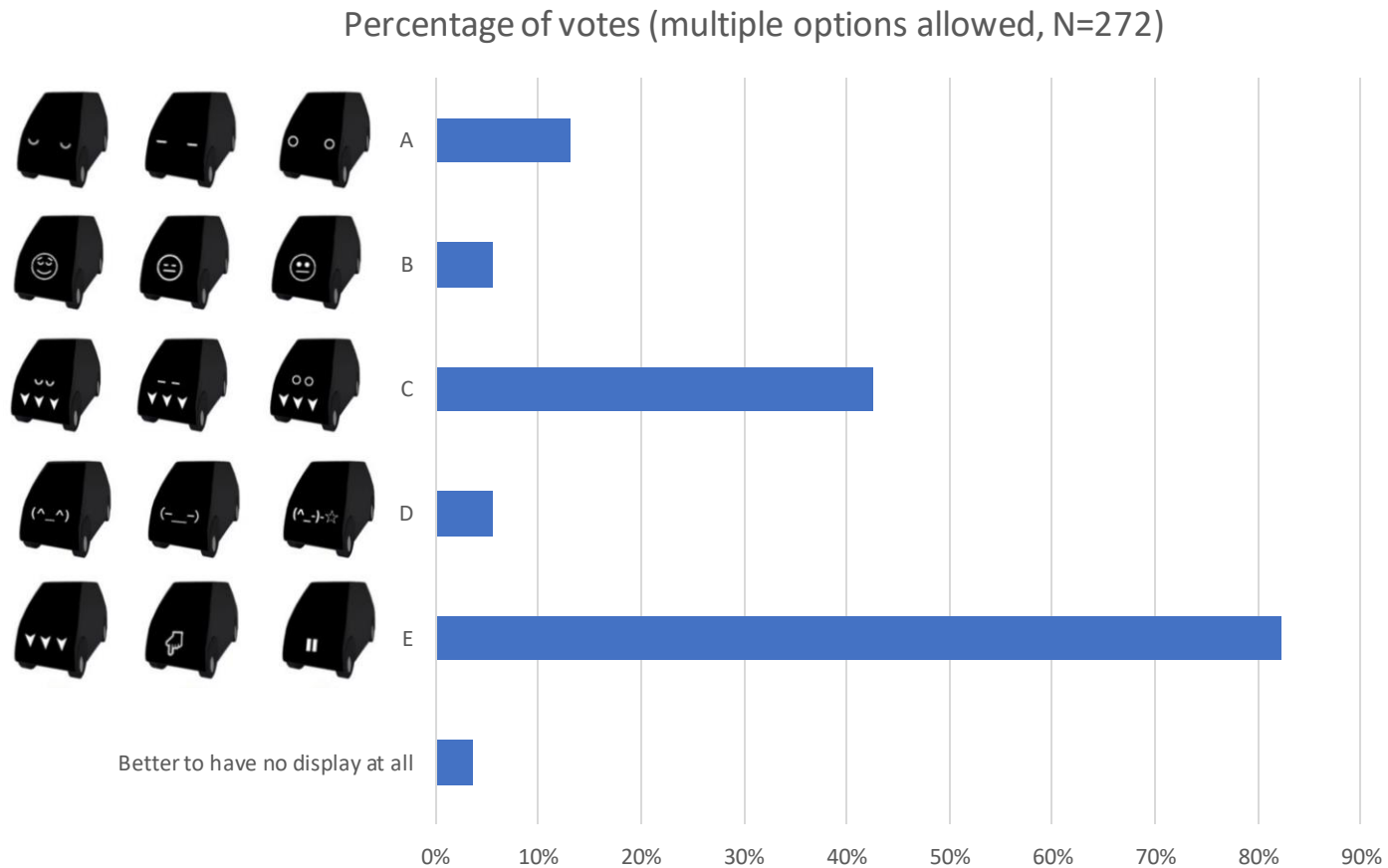
Age Groups



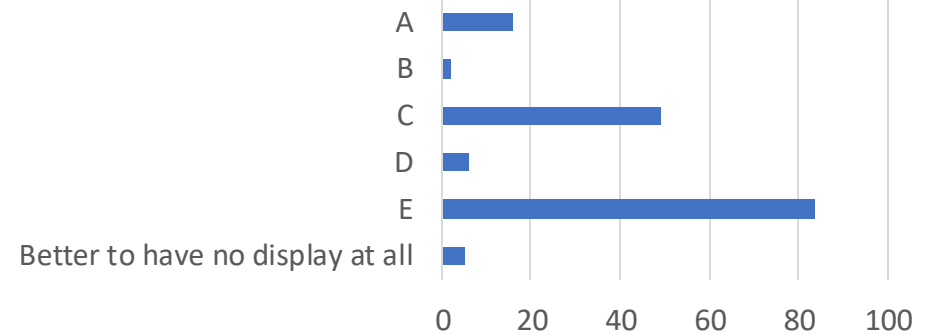
Gender



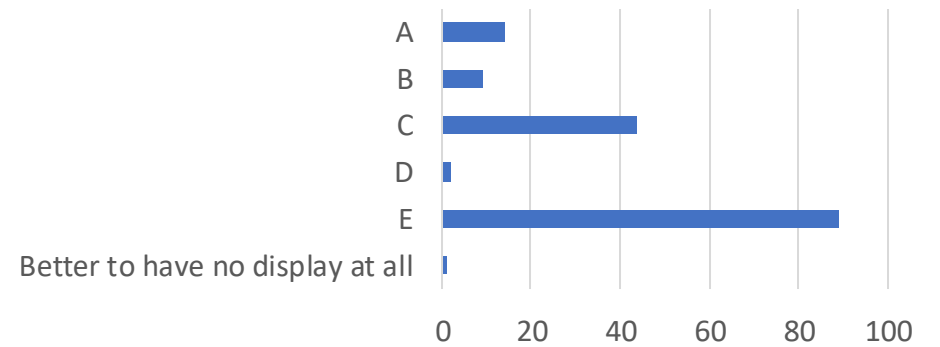
Results – Overall Impression



Males



Females



Results – Overall Impressions (Comparison with Japanese Data)

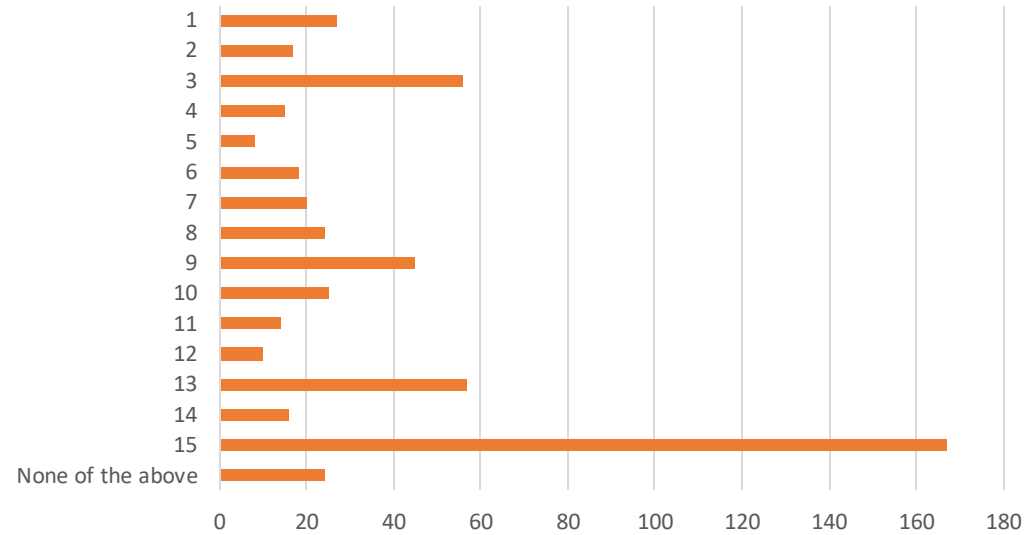
- Both groups of data had majorly chosen Pictogram (group E) followed by Eyes + Pictogram (Group C) group data.
- Japanese Data - 58% (113/119) of the respondents chose Group E (pictogram), while for the SG data group E was about 83% (232/272).
- For Group C, 50% (98/119) respondents chose from the Japanese data and for Singapore it was about 42% (116/272)

Gender wise Distribution

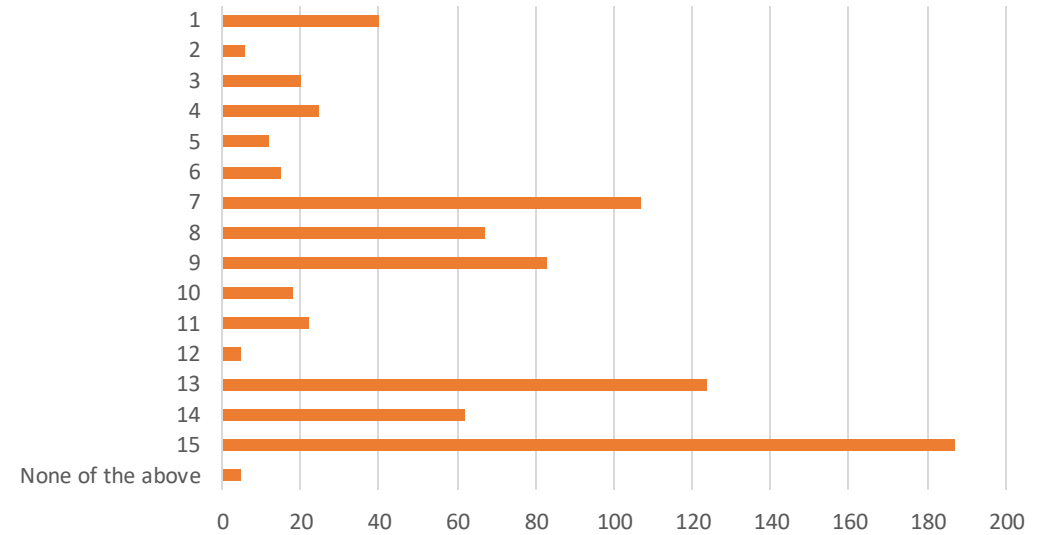
| Gender | Group | Japan | Singapore |
|--------|-------|--------------|---------------|
| Female | E | 24% (47/194) | 43% (118/272) |
| | C | 26% (53/194) | 21% 59/272 |
| Male | C | 21% (41/194) | 20% 57/272 |
| | E | 34% (65/194) | 40% 109/272 |

Results - Informativity

1. "I will slow down" or "I will stop"



2. "Please cross" or "Please go first"



15



13



3



15



13



7

Results – Informativity (Comparison with Japanese Data)

- " I will slow down" or "I will stop" - respondents from Singapore & Japan mainly chose option 15
- Singapore – 62% & Japan – 60%

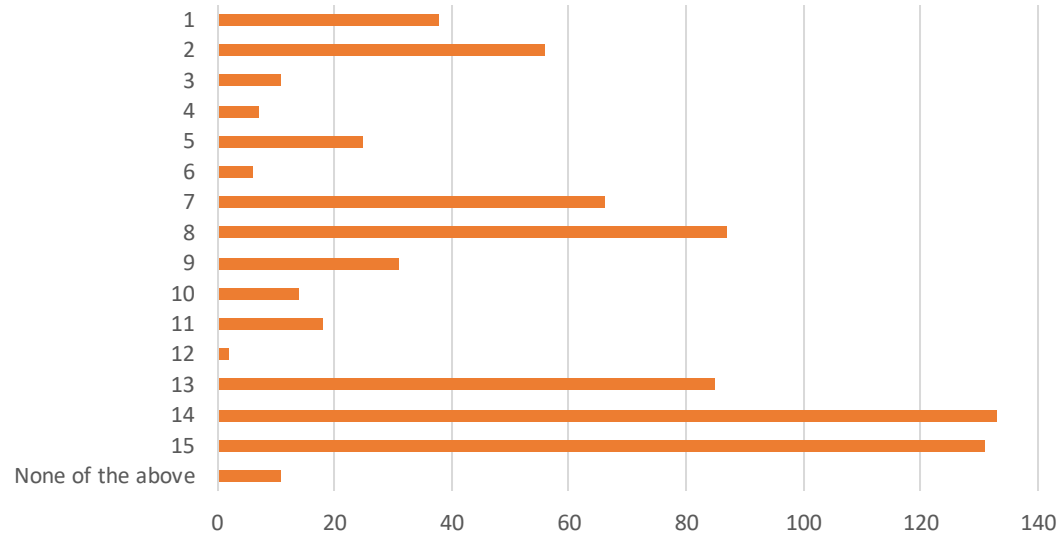


- "Please cross" or "Please go first" - respondents from Singapore & Japan mainly chose option 15, 13 & 7

| Option | Singapore | Japan |
|--------|-----------|-------|
| 15 | 68% | 67% |
| 13 | 45% | 44% |
| 7 | 39% | 48% |

Results - Informativity

3. "I'm aware of you" or "I'm sensing you"



15

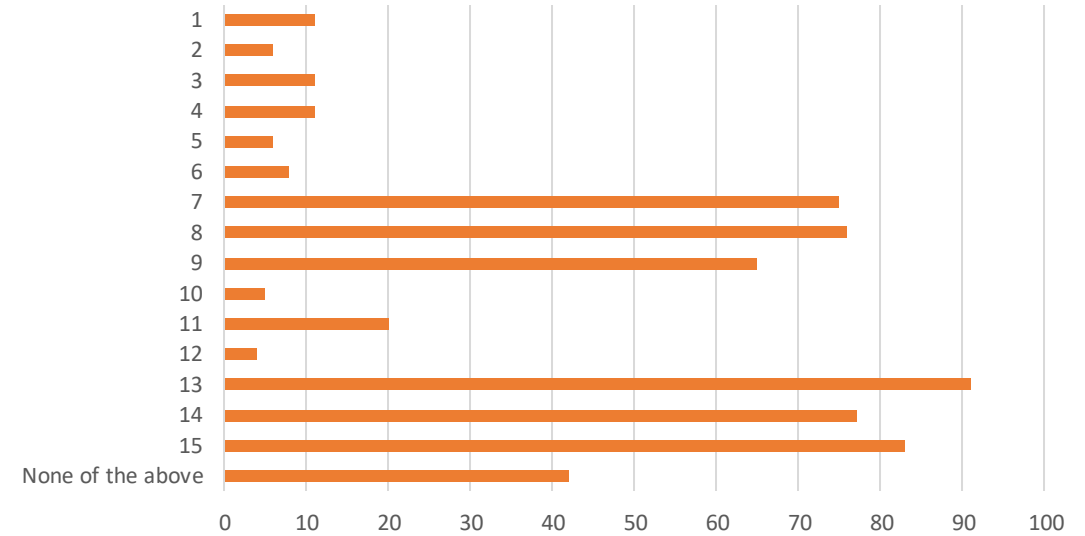


14



13

4. "I will go ahead" or "Excuse me first"



13



7



14

Results – Informativity (Comparison with Japanese Data)

- "I am aware of you" or "I am sensing you" - respondents from Singapore & Japan majorly chose option 15 and option 14

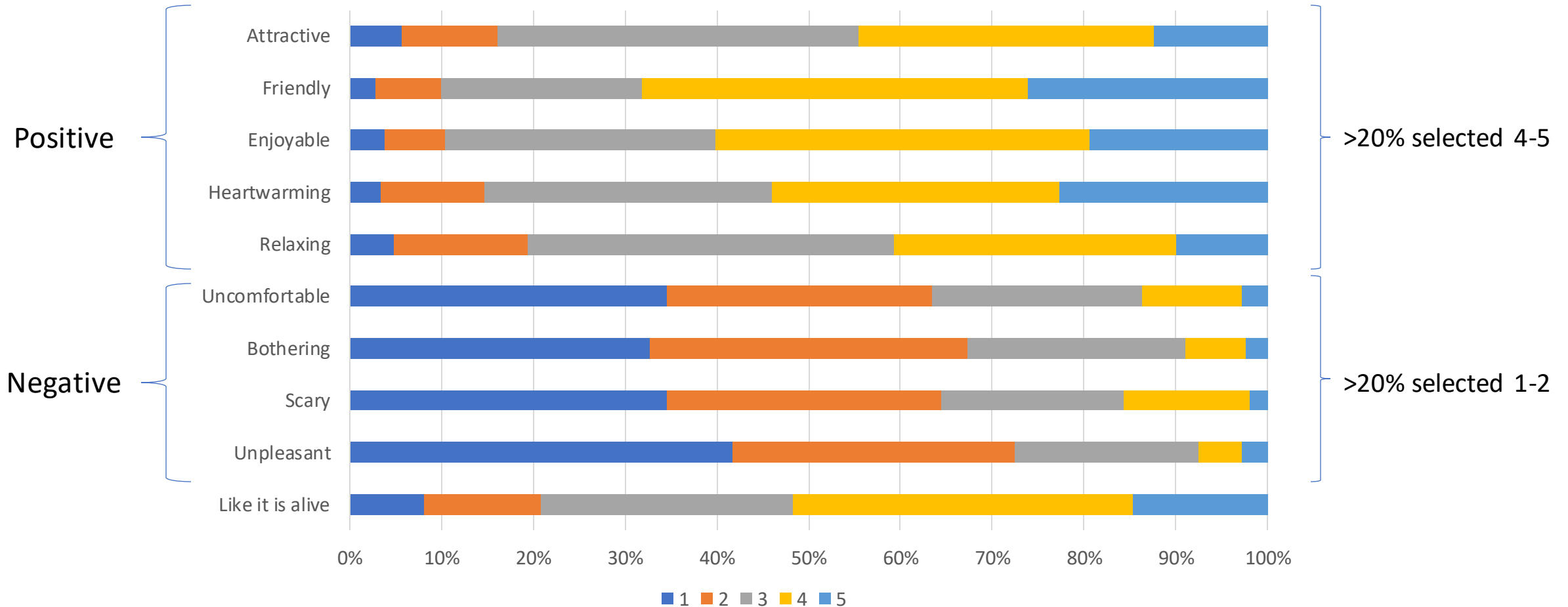
| Option | Singapore | Japan |
|--------|-----------|-------|
| 15 | 48% | 47% |
| 14 | 49% | 47% |



- "I will go ahead" or "Excuse me first" - Respondent from Singapore mainly chose option 13 (33%) & 15 (30%) while from Japan, the majority chose option 7 (28%) and option 13 (27%)



Results - Acceptability



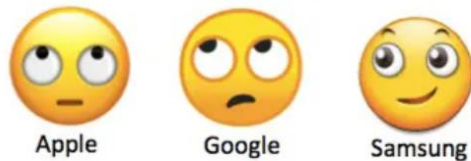
Results – Acceptability (Comparison with Japanese Data)

- The acceptability trend is quite similar between the two groups of respondents.
- From the Japanese report, respondents had feelings of communication with an AV as attractive, friendly, and enjoyable. Similar feelings of positivity are also seen in the responses from Singapore respondents. (over 50%)
- However, a small proportion of the respondents (<20%) also feel that such communication is bothering and uncomfortable. A similar trend is also observed in Singapore's respondents.

Emojis

- Device manufacturers and software makers use their own images to represent each emoji. ... Apple, Google (Android), Twitter, Microsoft, Samsung, Facebook and others each use the same Unicode standard but the images that emoji represent are all different but similar-looking images.
- For e.g.:

1. FACE WITH ROLLING EYES



EMOJIPEDIA

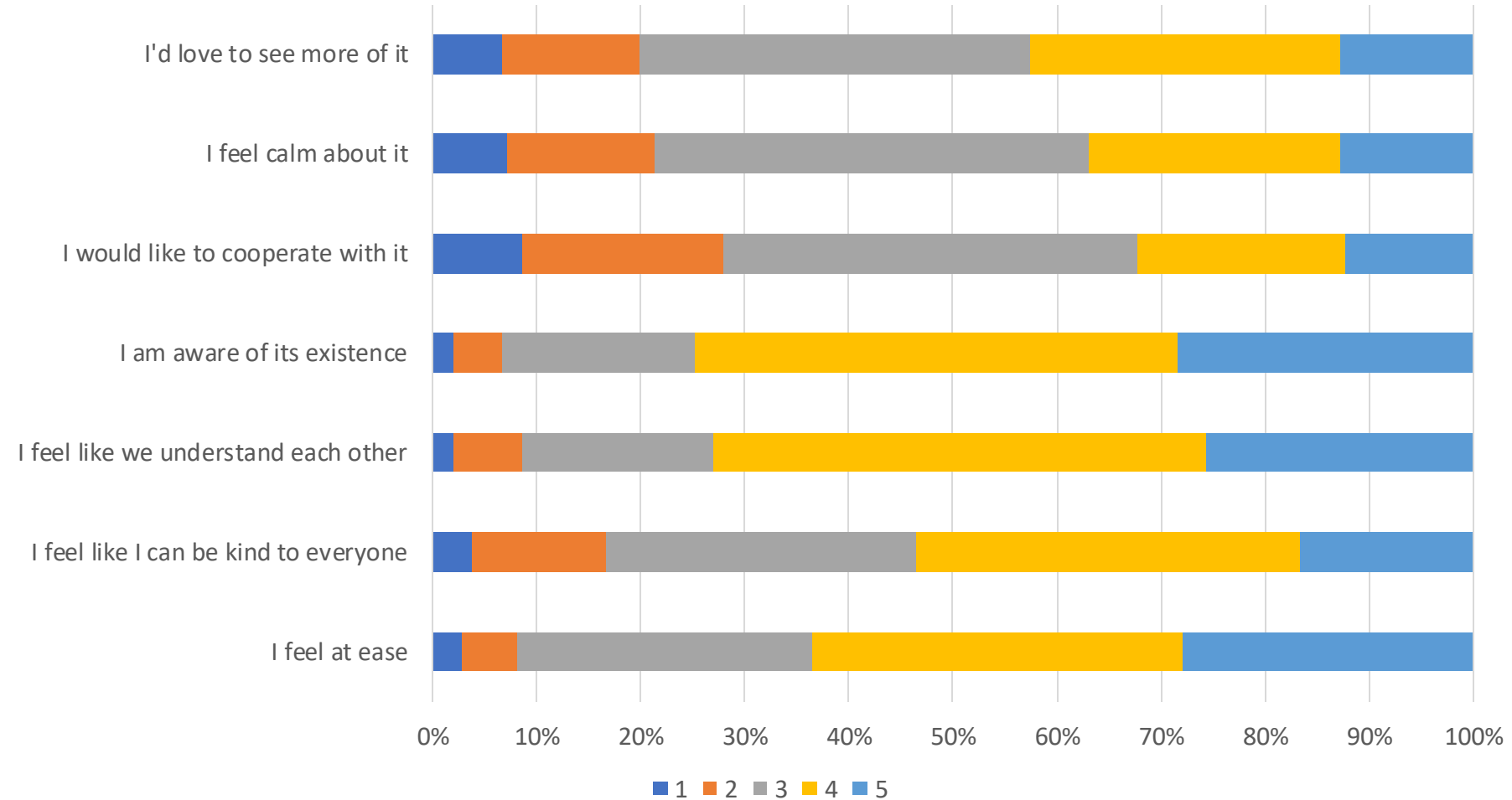
| Code | Browser | Appl | Goog | FB | Wind | Twtr | Joy | Sams | GMail |
|-------------------------|-------------------------|----------------------|----------------------|--------------------|----------------------|----------------------|---------------------|----------------------|-----------------------|
| U+1F600 | | | | | | | | | |

Source - [Full Emoji List, v14.0 \(unicode.org\)](#)

[22 Emojis That Look Completely Different on Different Phones | Mental Floss](#)

[Why do Emojis look different on different devices? \(flashmode.tn\)](#)

Results - Perceptivity



Q1) 'I will slow down' or 'I will stop'

- 137/211 (64%) respondents selected 15 as one of the options for slowing down
- The sign is widely used, simple and well understood which could make people relate to it more and they would tend to stop
- Some other common options that were chosen - option 13 (25%), option 9 (16%), option 1 (12%) & option 4 (10%)



15



13



9



1



4

Q2) 'Please cross' or 'Please go first'

- Option 15 (70%) was selected by most participants by a significant number as the symbol is also used on pedestrian crossings, and the participants would understand the same meaning behind the symbolism.
- In 'opinions' section, some respondents suggested the symbol could have a flashing green light too
- Option 13 was selected by 49% participants, option 7 – 40%, option 9 – 29% & option 14 (23%).



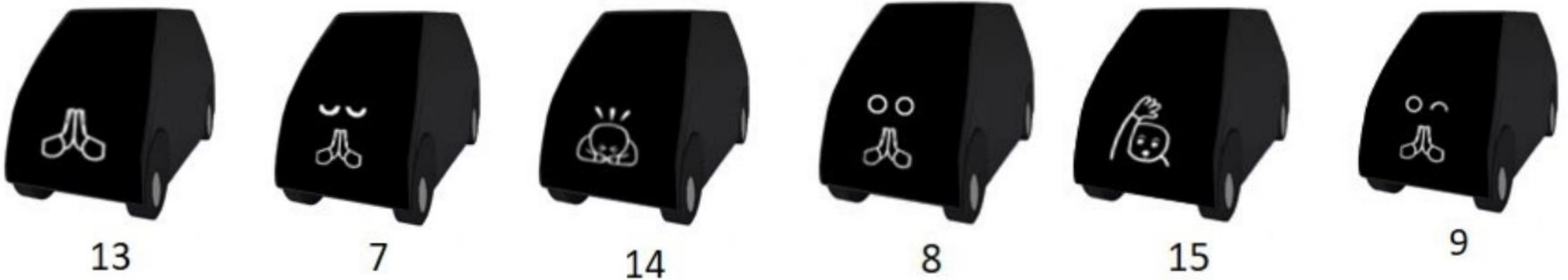
Q3) 'I am aware of you' or 'I am sensing you'

- To make pedestrians aware of the sensing, the two options most opted by participants were 14 & 15 (39%). This could be because option 14 displays a human face and pedestrians may find it easier to be alerted by a face alike. Similarly, option 15 shows a lit symbol, that could easily alert people
- Other commonly chosen options - Option 13 (28%), option 8 (24%), option 7 (17%), option 2 (16%)



Q4) 'I will go ahead' or 'Excuse me first'

- Option 13 (34%) has been most widely selected which could be because the symbol can be interpreted as a polite way of an excuse and get pedestrians' attention and it is likely to make a person stop. Option 7 (30%) gives more expressions to the AV and brings a more human sense to it.
- Option 14 (30%) gives a 'man bowing emoji' which also depicts that it can easily understood by people as a way of the AV asking for the pedestrian to make way.
- Other commonly chosen option – option 8 (29%), option 15 (27%), option 9 (24%)



Q5) Acceptability

- For communication with AVs, a good proportion of people find them to be attractive, friendly enjoyable and heartwarming.
- Some participants (30-40%) also find them to be uncomfortable, scary, and unpleasant.
- Common notions of unpleasant, bothering, scary and uncomfortable feelings have been observed between both younger and older generation participants, yet they find the experience to be friendly, attractive and enjoyable.
- These sentiments could be observed initially because such communication isn't the norm currently and not too common. People may take some time to get adapted and get themselves adjusted to these newer technologies. The older age groups may also be less aware of it compared to the younger generation.

Q6) Perceptions

- Most of the participants (both young and old) find it hard to understand the AVs and do not feel at ease.
- However, most of them are quite open-minded towards AV in the sense that they'd like to see more of it, like to cooperate more and the fact that they are aware of its existence and are calm about it.

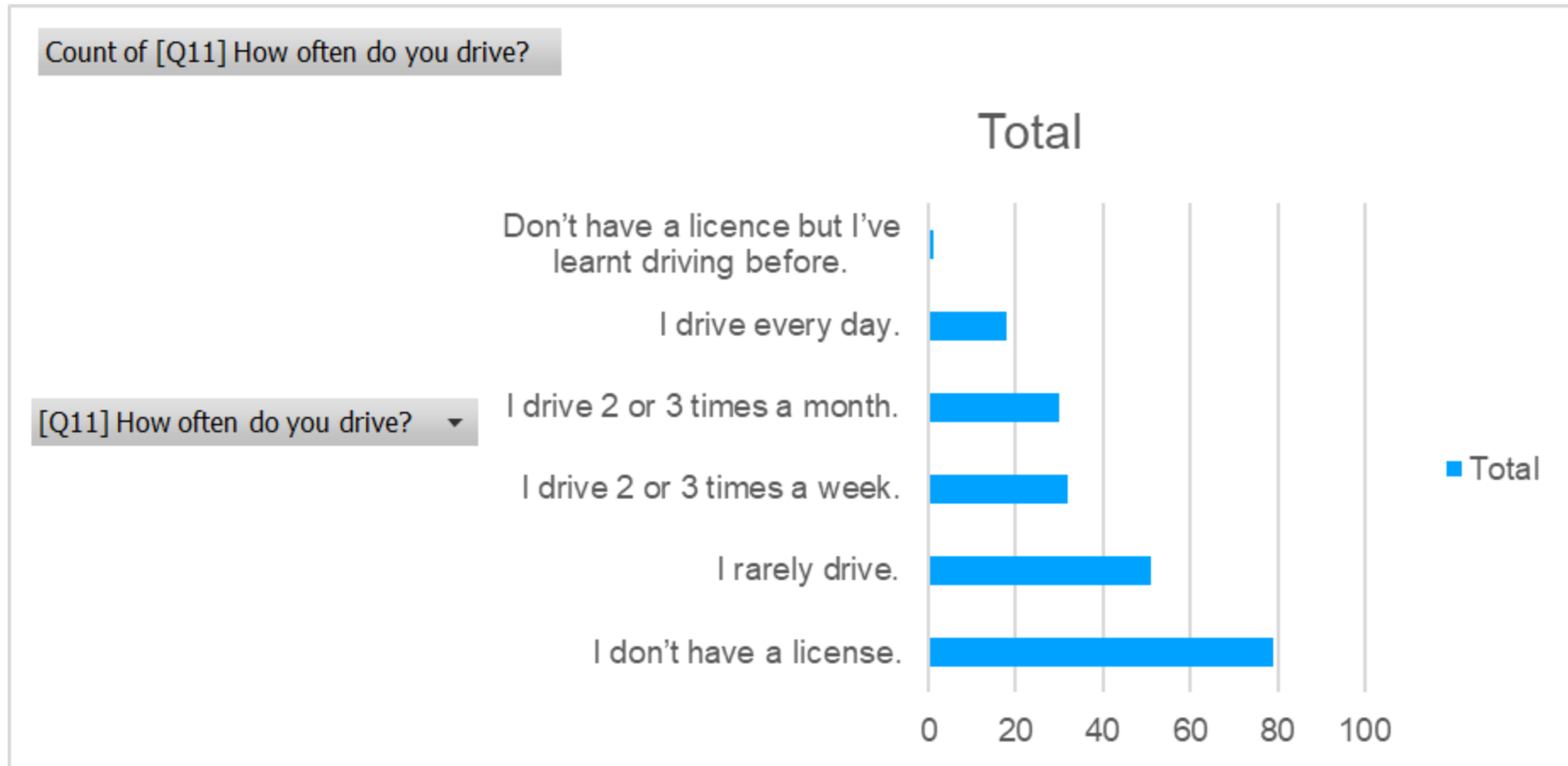
Q7) Opinions

- People do need time to get used to seeing AVs on road
- However, some respondents still have concerns about safety and malfunctioning issues.
- Respondents also feel there is a need to have a standard way of communication that does not get misinterpreted and can be understood by everyone as some feel they are confused. Some feel older generation and children may not know what those emoticons mean.
- Some also gave ideas like sound, words and colors to better relate with people and they understand better
- However, using emoticons, bring a human sense to it, and it is an interesting and a cool concept

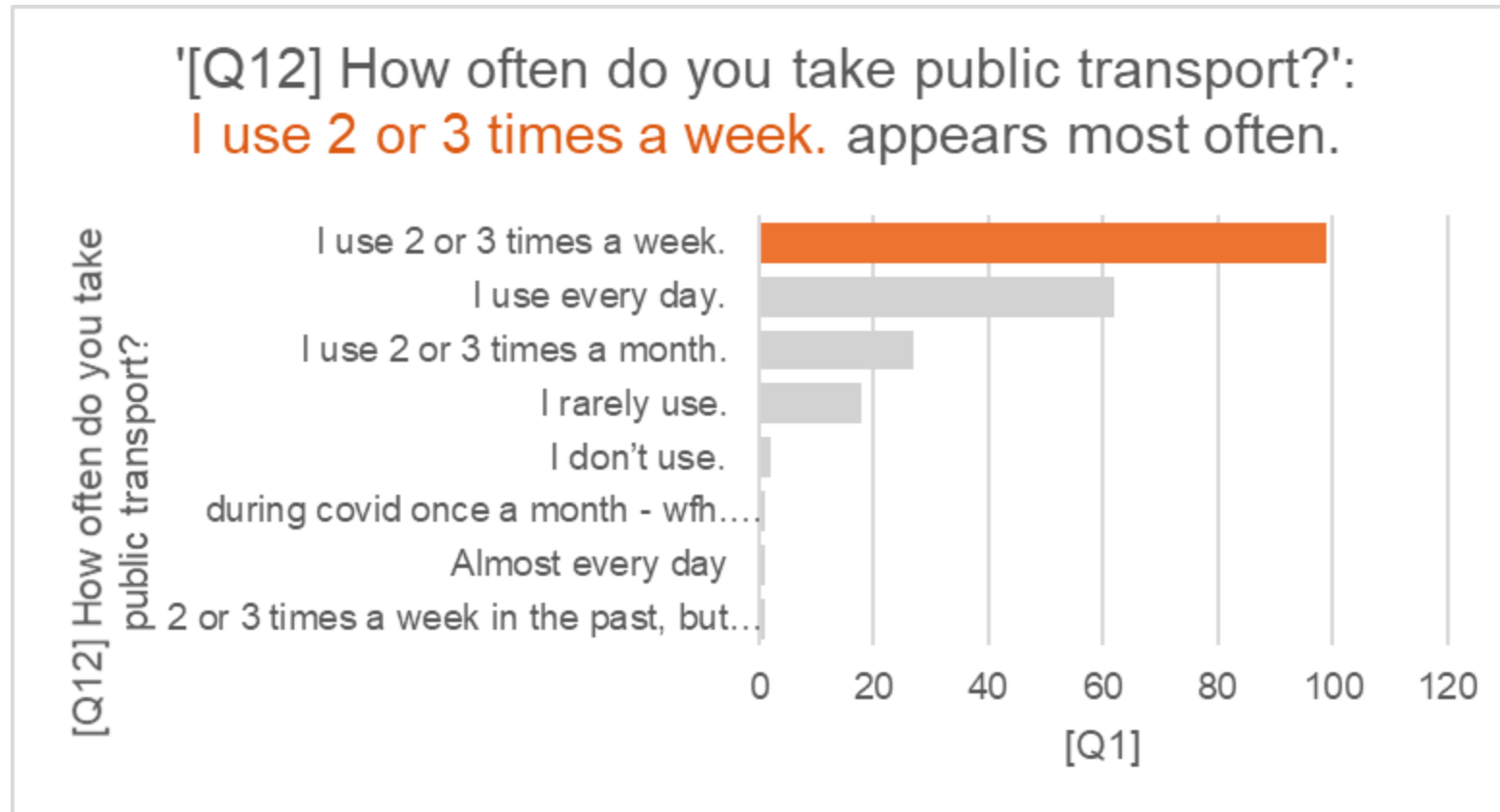
Q8) Overall Impression

- 55% of the respondents chose at least Group E as one of their answers
- This could be because people may find Group E to be simpler to understand and more relatable emoticons
- 44% were also in the favor of choosing Group C

Q11) How often do you drive

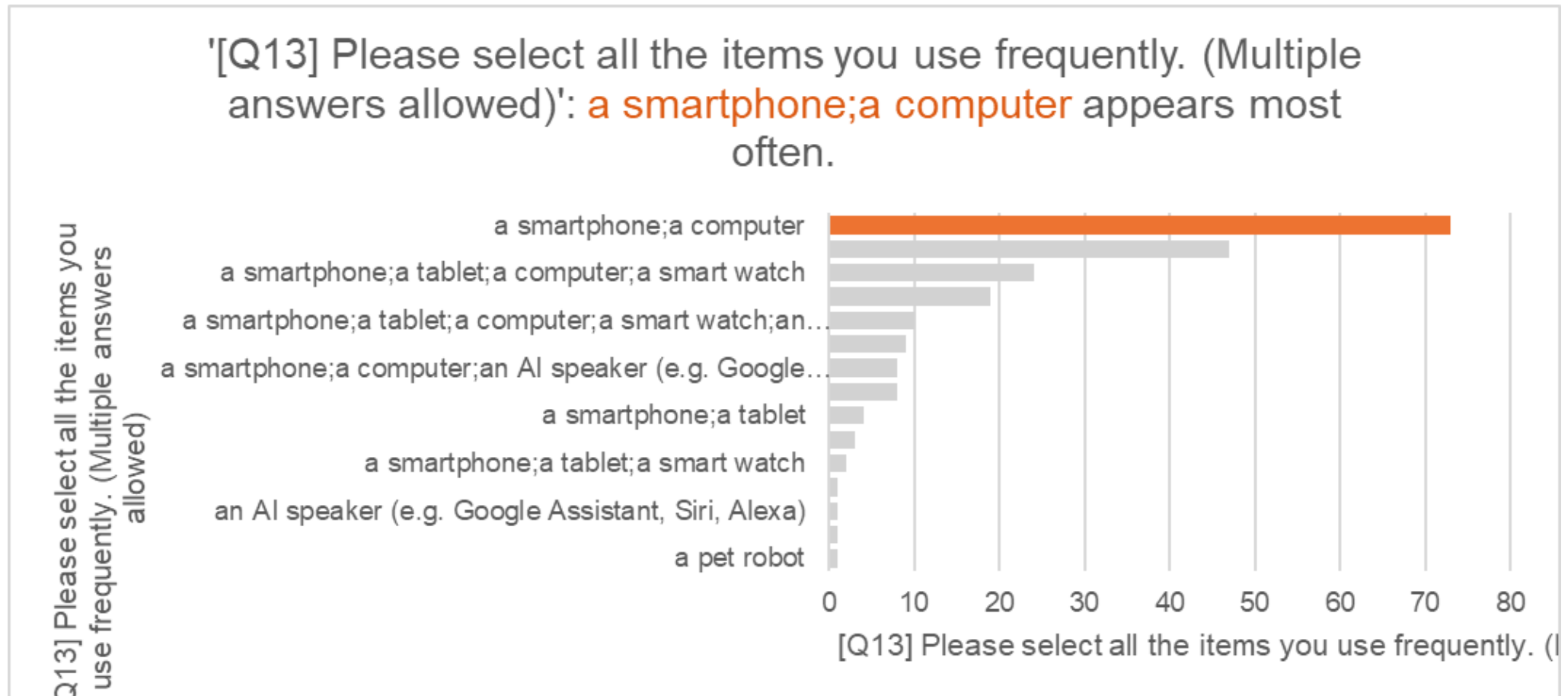


Q12) How often do you take public transport



13) All the items used frequently

- Almost all respondents use a smartphone frequently, followed by computer and tablet



14) All the services used frequently

- Some of the most used applications used by respondents are usually a combined use of Email, WhatsApp, Instagram, YouTube, Telegram & Facebook
- Some of the lesser-used apps are TikTok, Twitter, Discord, WeChat, Slack and Signal

15)

- Vast majority has a positive outlook about the spread of autonomous vehicles in cities as most of them look forward to it but also want to observe for the time being.
- People might want to take some time and get adapted to seeing AVs on the road and get used to them before integrating them into their everyday life.
- However, some people think the spread would be slow and have feeling of worry and anxiousness and they may not feel optimistic about the spread of AVs in the future