Ministry of Land, Infrastructure, Transport and Tourism

QRTV-07-06

Surveys for Standardization of AVAS in Japan

Results of questionnaires investigating in which situations quietness of HV/EV works against people

JASIC

Background, Purpose, Survey Procedure

- Background

  HV/EV market growing BUT too quiet to perceive for people ⇒WP29 set up guidelines based on Japanese guidelines

  ⇒Need standardization

  ⇒Questionnaires to figure out actual situations
- Purpose of Survey

  ・Collect basic data

  ・Identify what situations (ex. back ground noise) are required for sound generation.
- Survey Procedure

  ・By questionnaires

  ・Examine situations; feel threatened by HV/EV (except ICE) without perceiving its approach, be startled by it, or contact with it. (feel threatened by HV/EV)

Survey Contents

(1) Target: Pedestrians and people on bicycles ("passersby")
Experiences of feel threatened by HV/EV

(2)Target: HV/EV drivers
Experiences of feel threatened by passerby

(3)Target: Visually impaired people
When walking alone with white canes without any guides or guide-dogs, experiences of feel threatened by HV/EV

(1) Survey for passersby

- Survey Procedure

(1) Internet survey to collect answers as much as possible

(2) Screening Survey to 10,000 people, asked if they have following experiences;

(a) Feel threatened by it

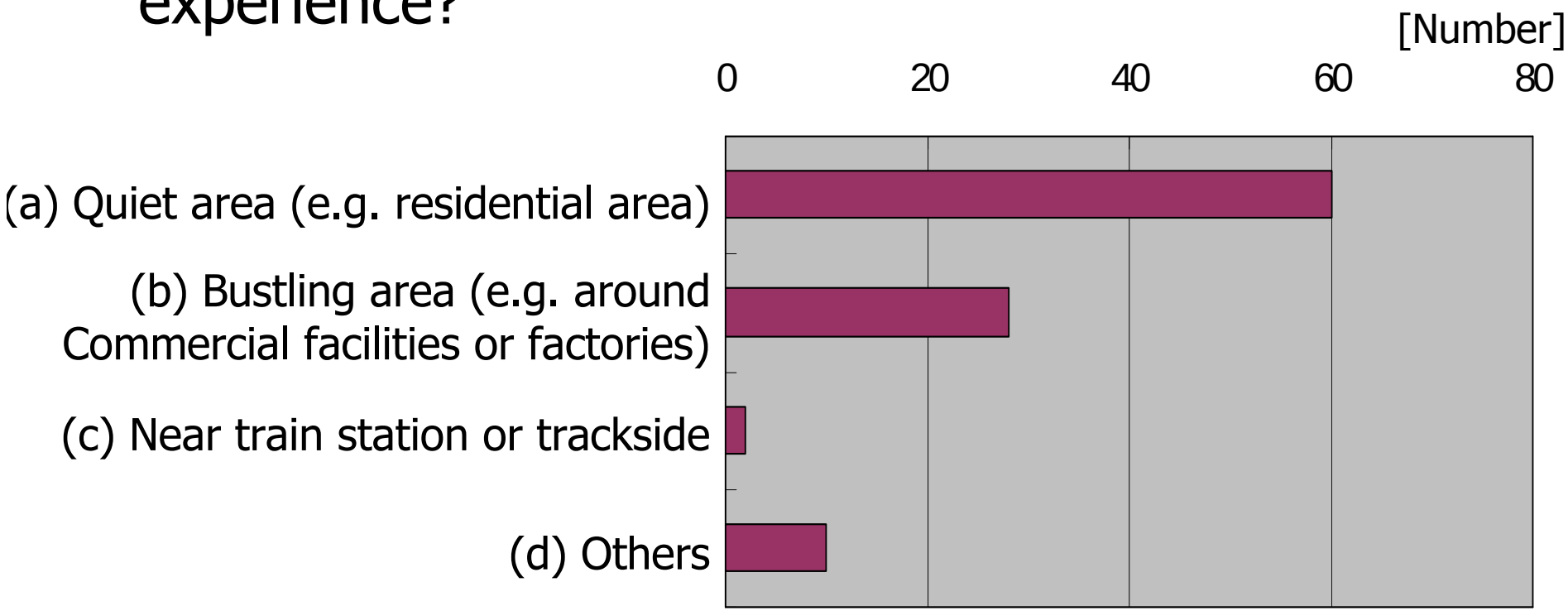
(b) Just walking or on bikes without operating mobile phones or listening music with portable player at that time.

(3) Questionnaire (Main survey) to 380 people

- Examine 100 responses (stop accepting responses when they reached to 100)

(1) Survey for passersby

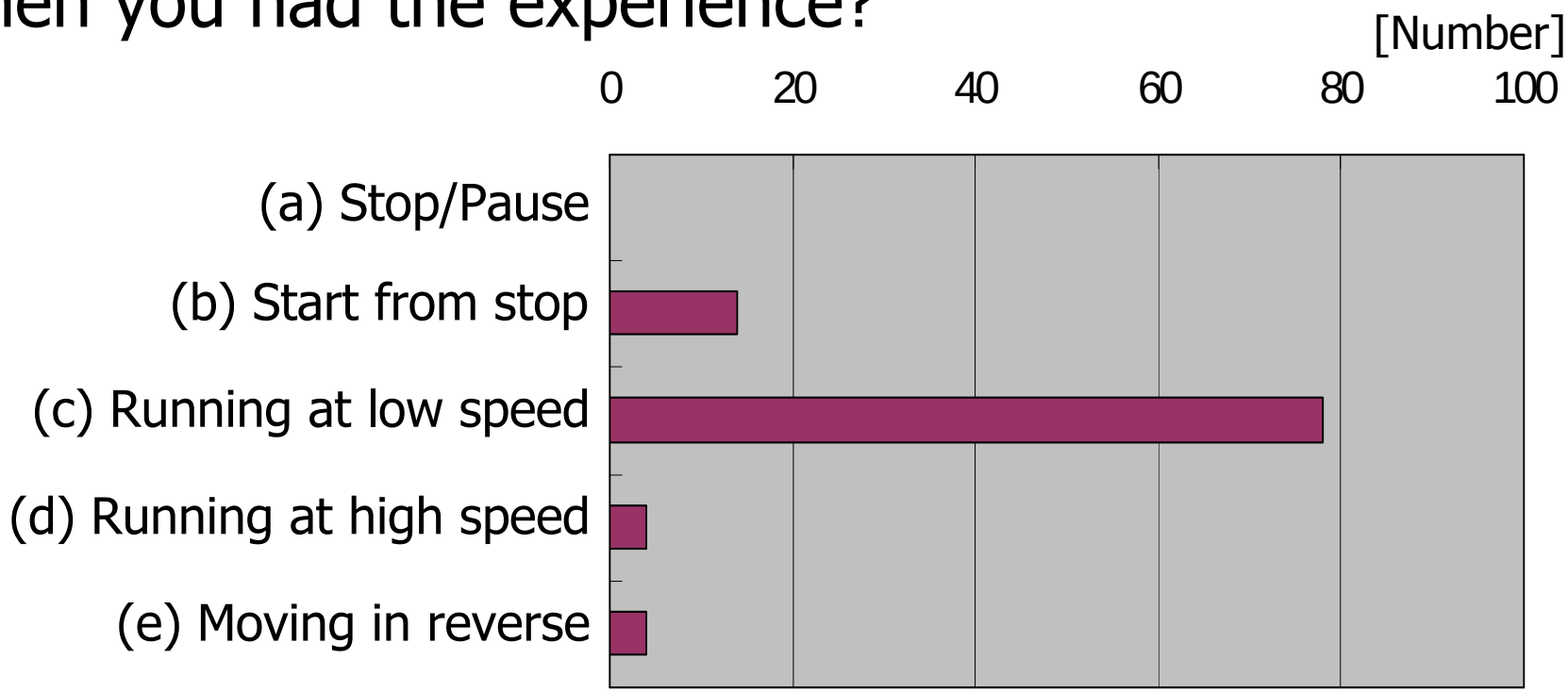
(1) Where did it happen when you had the experience?



60 people answered (a) Quiet area (e.g. residential area).

(1) Survey for passersby

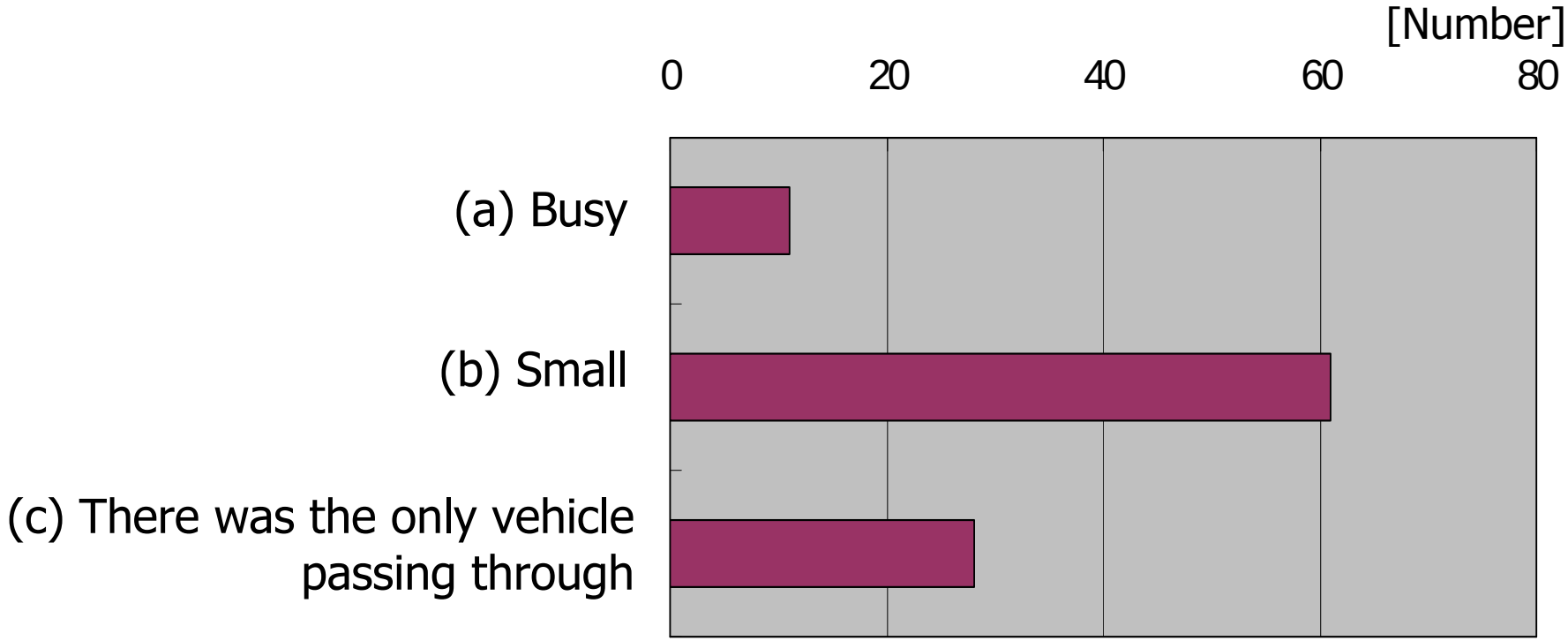
(2) What was the running condition of the vehicle when you had the experience?



78 answered (c) Running at low speed.

(1) Survey for passersby

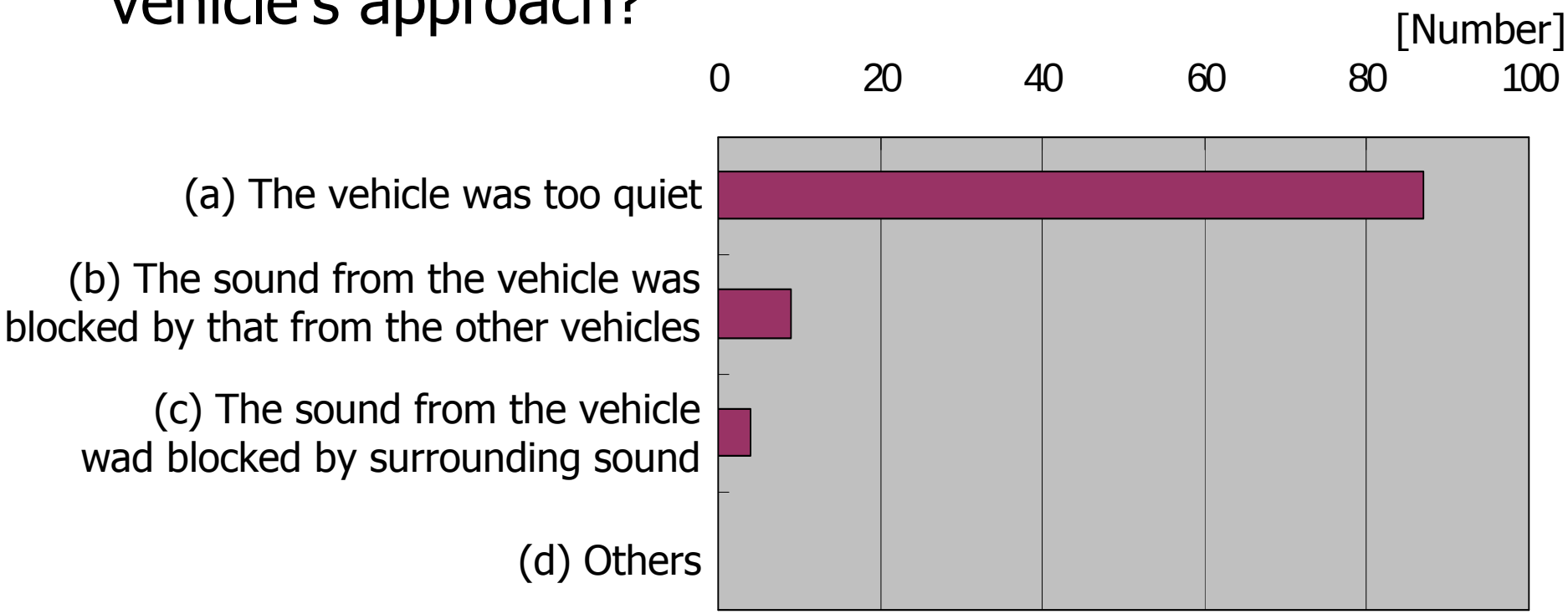
(3) How busy was the traffic at that time?



87 people answered (b) Small or
(c) There was the only passing through.

(1) Survey for passersby

(4) Why do you think you did not perceive the vehicle's approach?



87 answered (a) The vehicle was too quiet.

(1) Survey for passersby

- Results:
  - 60 answered it was in a quiet area (residential area).
  - 78 answered the vehicle was at low speed.
  - 87 answered there was small traffic volume.

    → It mainly happened at low vehicle speed in a quiet area
  - 87 answered the vehicle was too quiet as the reason for not perceiving the vehicle.

The reason for the above results was assumed that passersby in quiet areas may perceive a vehicle approach by sound, while they in busy road or bustling areas will recognize it by eye not by sound.

(2) Survey for HV/EV drivers

- Survey Procedure

(1) Internet survey to collect answers as much as possible

(2) Screening Survey to 10,000 people, asked if they have following experiences;

(a) Drive HV/EV almost everyday,

(b) Feel threatened by passersby who did not perceive their driving vehicles,

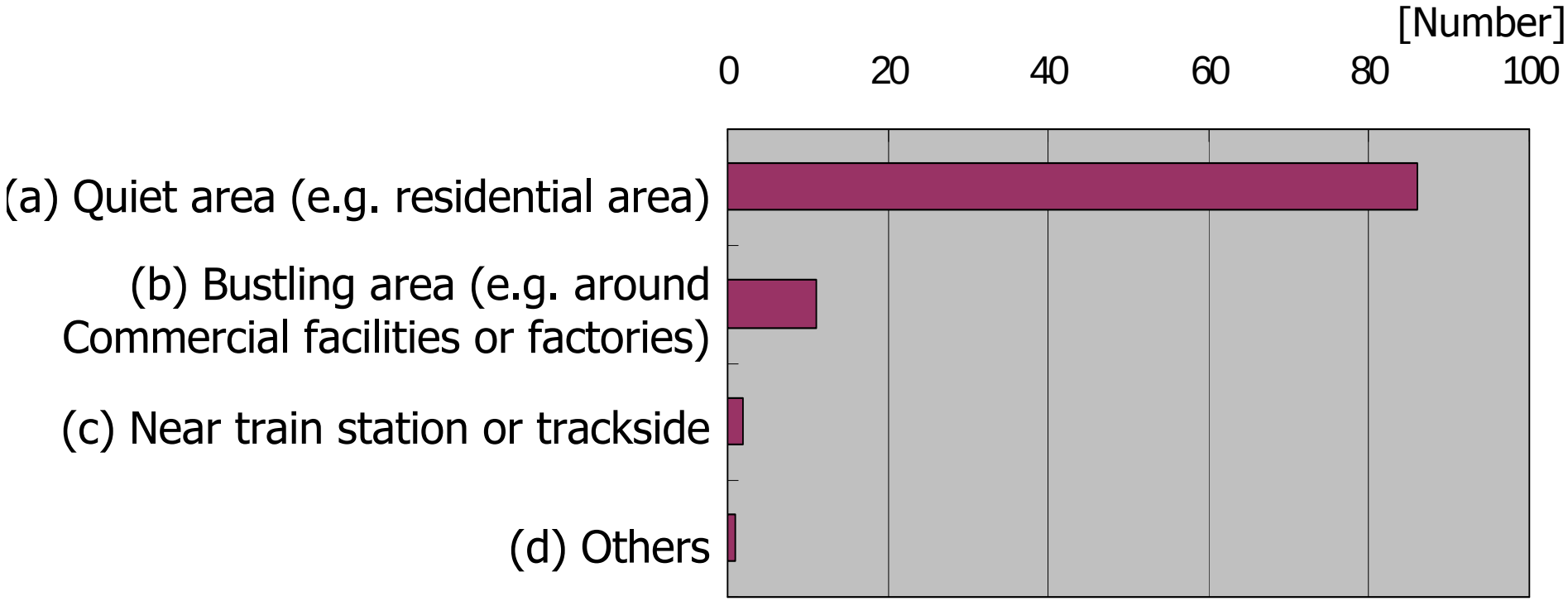
(c) Passersby were just walking or on bicycles without operating mobile phones or listening to music with portable player.

(3) Questionnaire (Main survey) to 1,200 people

- Examine 100 responses (stop accepting responses when they reached to 100)

(2) Survey for HV/EV drivers

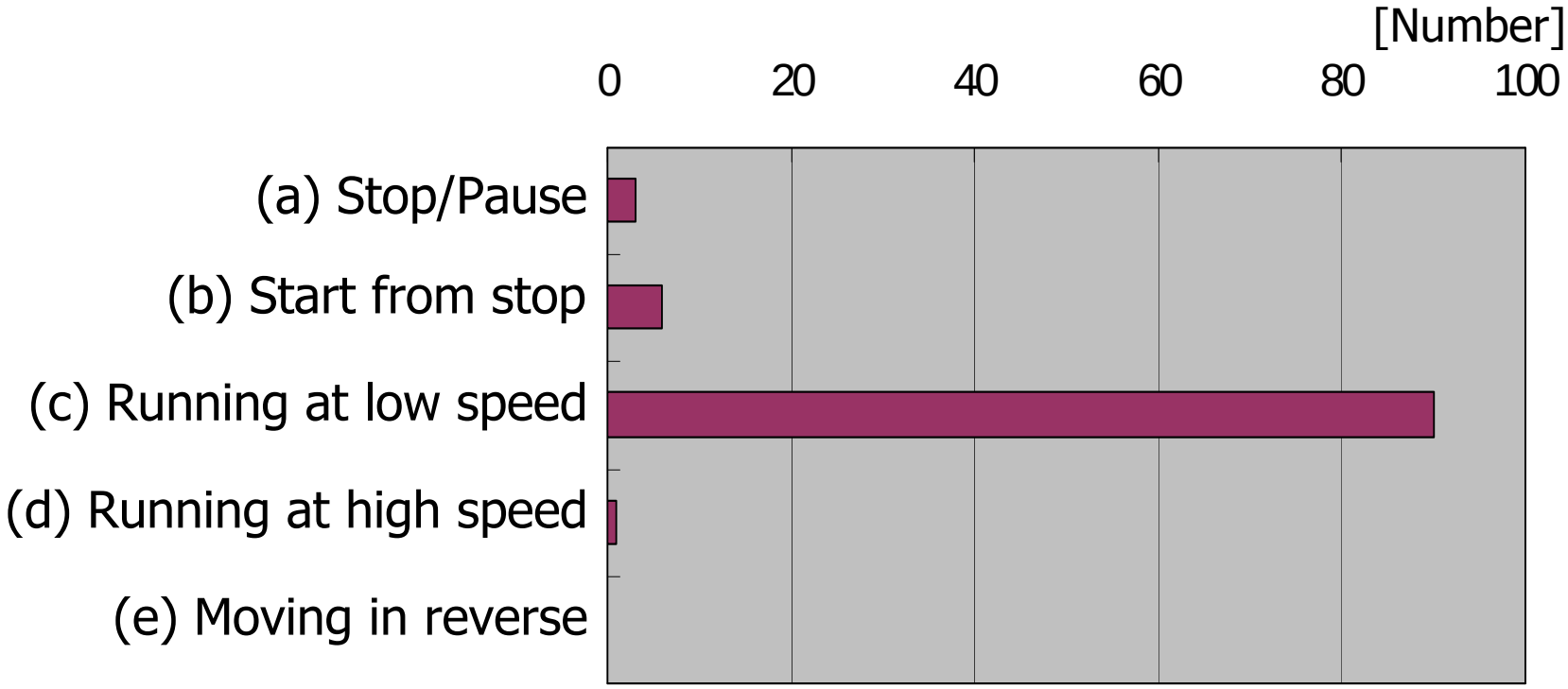
(1) Where did you have the experience?



86 drivers answered (a) Quiet area (e.g. residential area).

(2) Survey for HV/EV drivers

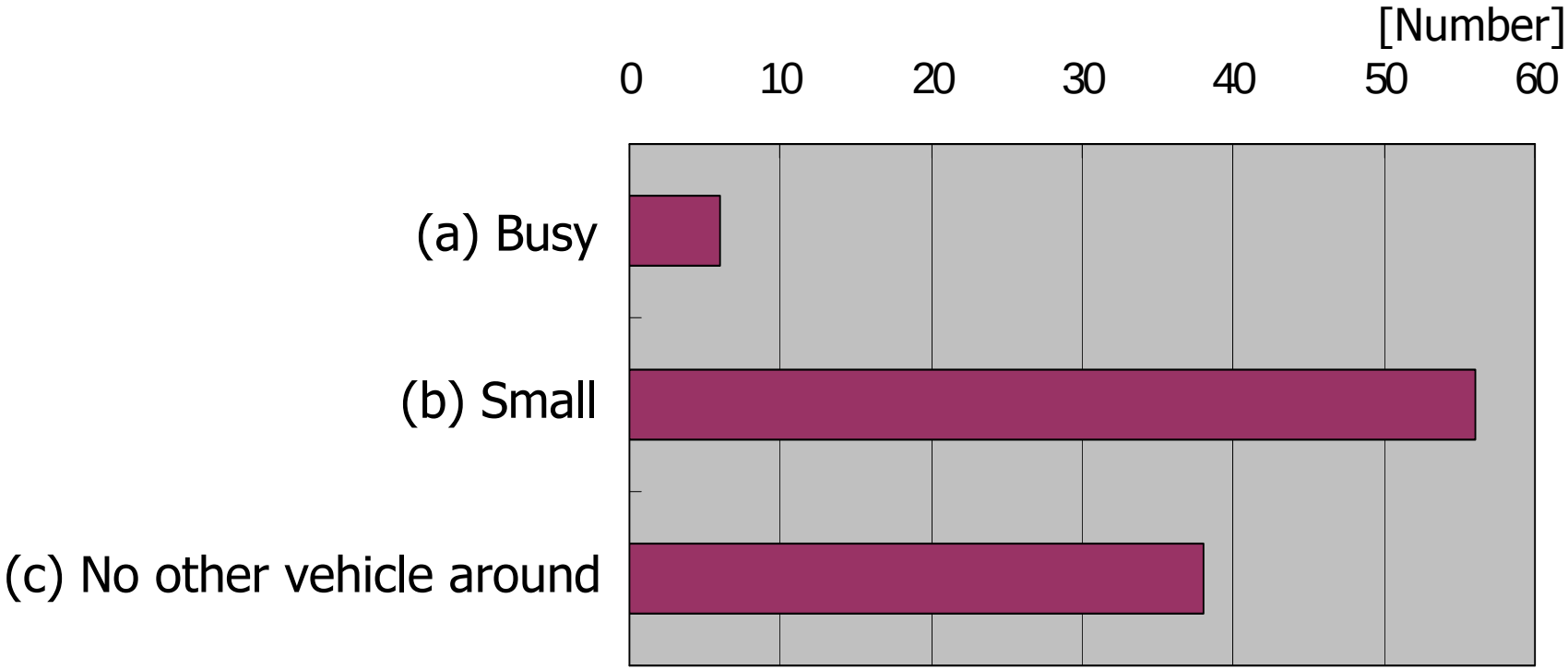
(2) What was the running condition at that time?



90 drivers answered (c) Running at low speed.

(2) Survey for HV/EV drivers

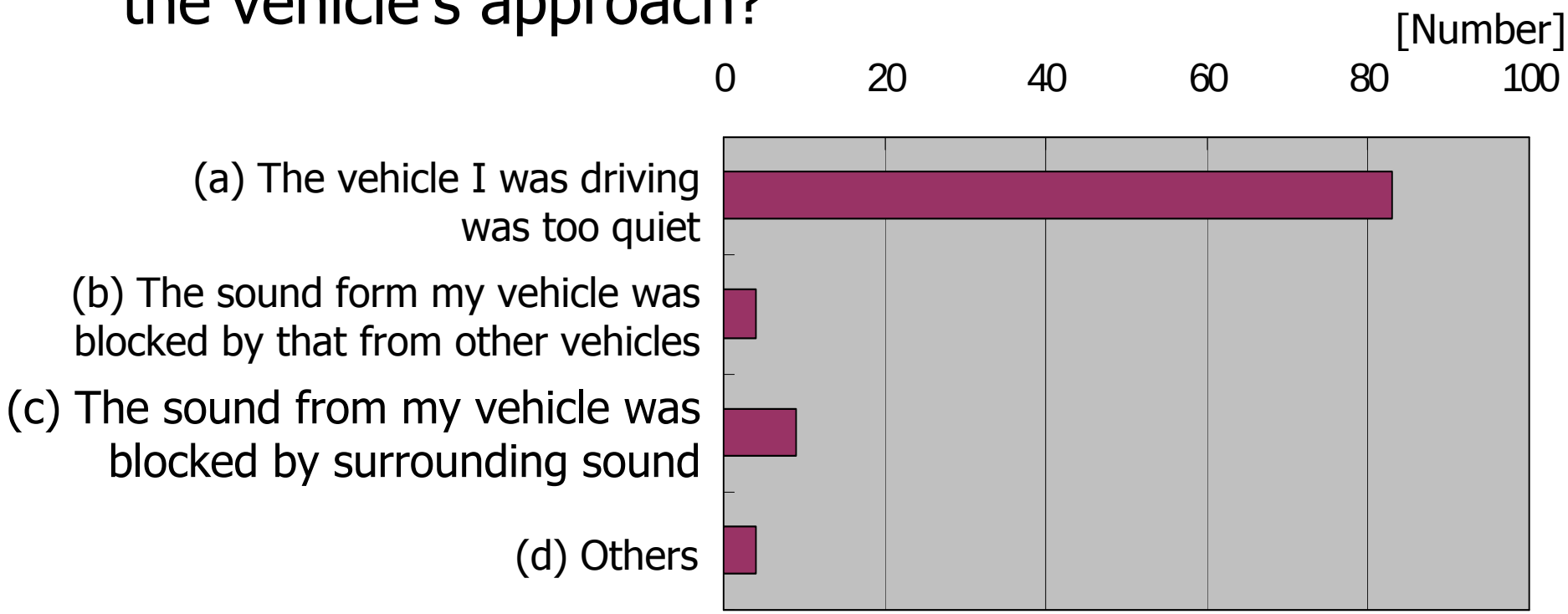
(3) How busy was the traffic at that time?



56drivers answered (b), 37 answered (c).
→ 93 drivers answered it was small traffic volume.

(2) Survey for HV/EV drivers

(4) Why do you think the passerby did not perceive the vehicle's approach?



83 drivers answered (a) The vehicle I was driving was too quiet.

(2) Survey for HV/EV drivers

(5) What is the concrete situation when you had the experiences that you have felt threatened by passersby who did not perceive approaching your vehicle? (Please fill it out in a specific way)

42 drivers, "passersby did not perceive when their vehicles approached from behind them"

18 drivers out of 42, "passersby suddenly run in front of their vehicles without looking at behind."

One of the situations felt threatened:
Passersby suddenly went across in front of their vehicles without looking at behind even when their vehicles approached just behind pedestrians.

(2) Survey for HV/EV drivers

- Results:
  - 86 answered it was in a quiet area (residential area).
  - 90 answered the vehicle was at low speed.
  - 93 answered there was small traffic volume.

    → It mainly happened at low vehicle speed in a quiet area
  - 83 answered their vehicles were too quiet as the reason that passersby did not perceive their vehicles.

The reason for the above results was assumed that the situation occurred in quiet areas, for example passersby did not perceive their vehicles and suddenly went across in front of them although these vehicles were approaching just behind them.

(3) Survey for visually impaired people

- Survey Procedure
  Difficult to answer Internet survey
  Cooperating with Federations of the blind,
  Easy-to-answer questionnaire

- Difference in vision: completely blind / see a littlie.
  Prepare for 2 kinds: Braille and Bigger Letters (size 22pt).
  (1) Braille: send 200 people, collect 69 answers
  (2) Bigger Letters: send 90 people, collect 35 answers
  Note: Low collection rate because of voluntary response

- Examine 104 responses

(3) Survey for visually impaired people

- Instead of Screening survey, 3 questions in Main survey identified people who meet conditions;

  (a) Frequency of going out alone (with a white cane without any guide or guide-dog),

  (b) Experience of feeling threatened by too-quiet vehicle,

  (c) Frequency of feeling the vehicle was HV/EV when they had the experience.
- Pick up people:

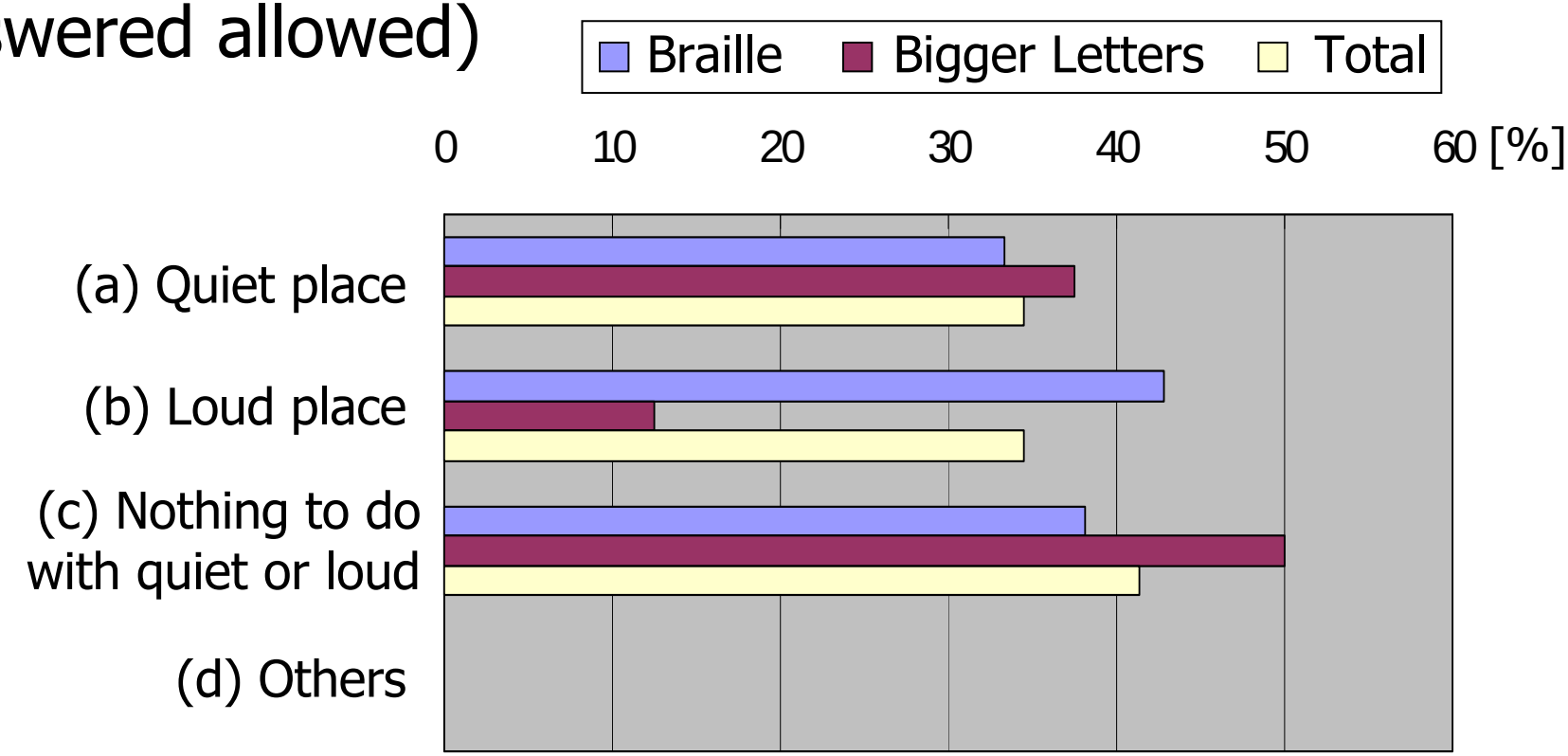
  (a) Go out alone everyday or sometimes,

  (b) Feel threatened by too-quiet vehicle,

  (c) Feel it was always HV/EV.
- Results: 21 people in Braille, 8 in Bigger Letters met above conditions. Examine this 29 responses.

(3) Survey for visually impaired people

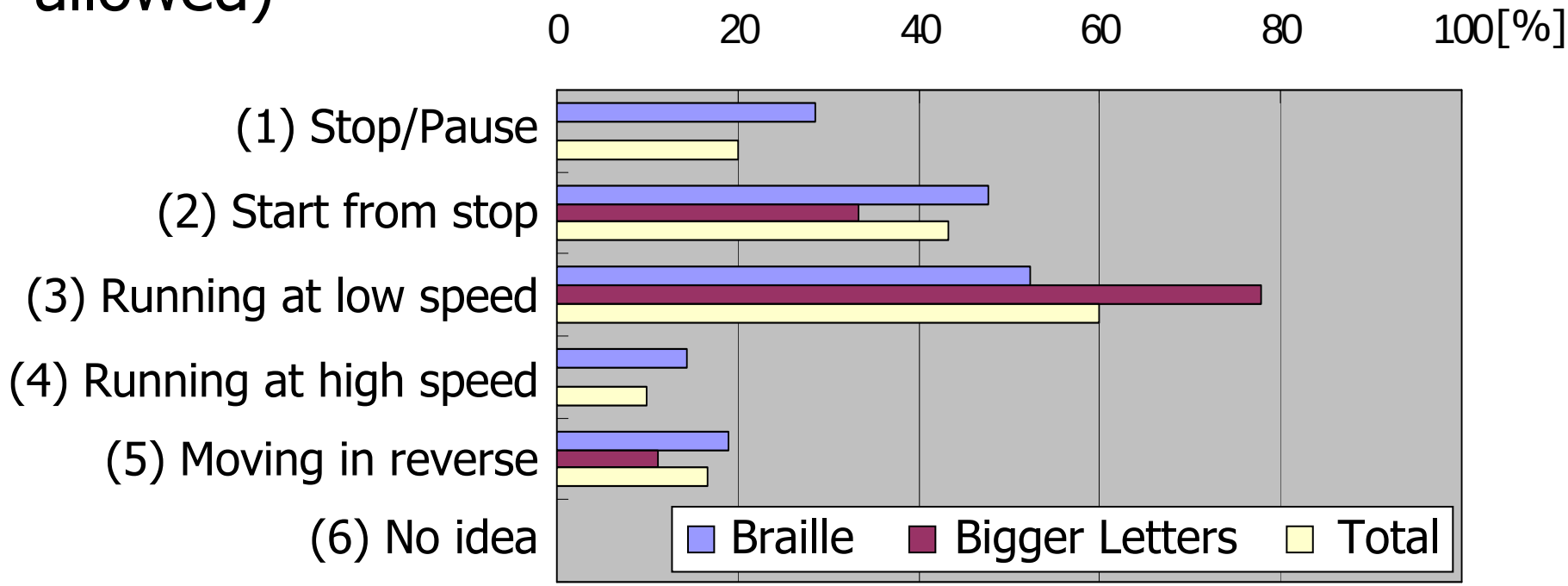
(1) Where did you have the experience? (Multiple answered allowed)



Many respondents answered (c) Nothing to do with quiet or loud.Visually impaired people are considered that they always figure out their circumstances by sound information.

(3) Survey for visually impaired people

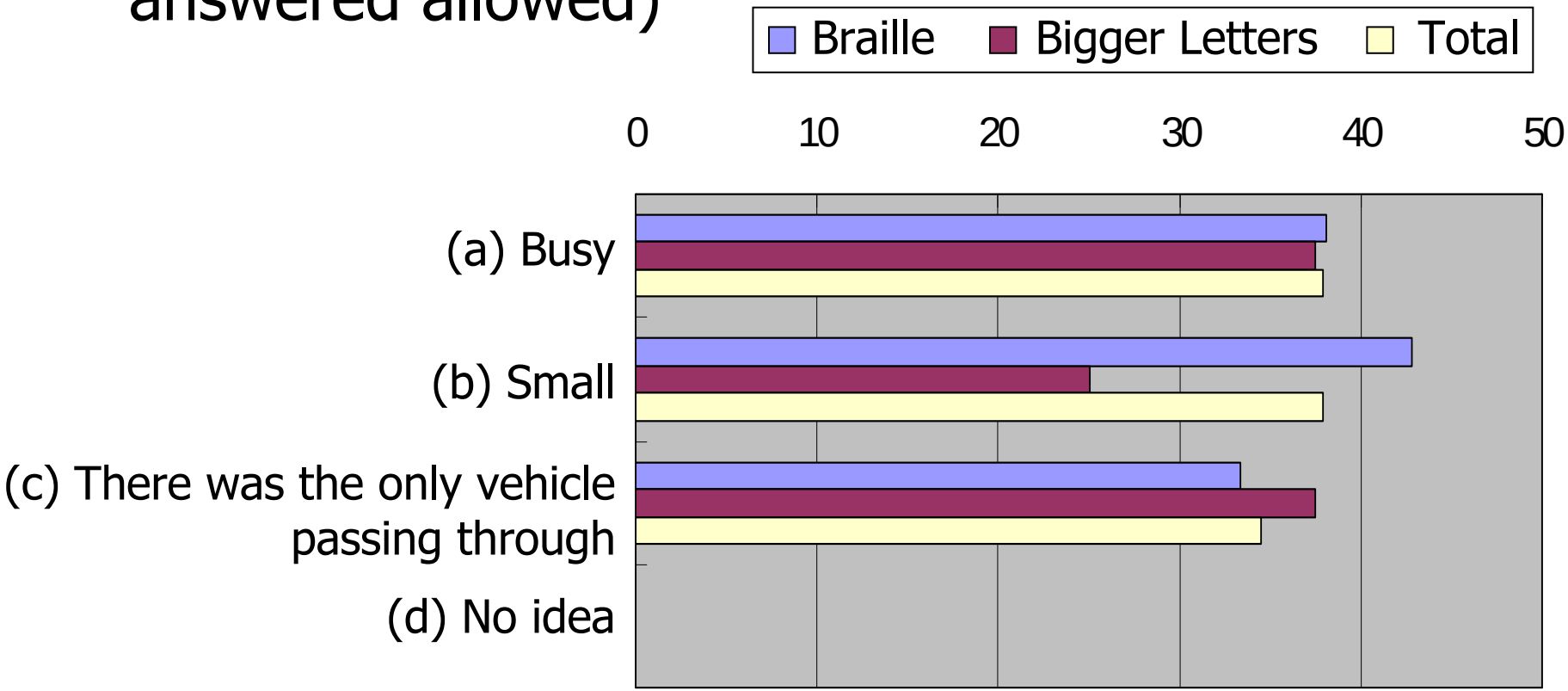
(2) What was the running condition of the vehicle when you had the experience? (Multiple answered allowed)



Most people answered it was at low speed or below.

(3) Survey for visually impaired people

(3) How busy was the traffic at that time? (Multiple answered allowed)



Over 60% of respondents in both Braille and Bigger Letters answered (b) or (c).

(3) Survey for visually impaired people

- Results:

  *Place; Difficult to assess calmness of surroundings
  Sound information essential for visually impaired people

  * Running condition; the top answer, at low speed.

  *Traffic; over 60% in Braille and Bigger Letters, small or there was the only vehicle passing through.

Additional Information

- Interview with the social adjustment training education center for visually impaired people

  When visually impaired people cannot hear the sound of approaching vehicles in a noisy place (e.g. noise from factories, etc.), they are directed to stop in place until the noise becomes small or "to walk aside" to side of the road.

- Measured background noise level: about 60dB

  * Visually impaired people instructed to walk by other means than sound

  * Not necessary to consider over 60dB

Summary

- Japan has just begun researches for standardization based on guidelines. It is not cleared that actual situations where people feel threatened by too quiet HV/EV. In order to collect basic data, questionnaires were conducted.
- Results:

  * Passersby and HV/EV drivers

    Vehicle was at low speed and it was in a quiet area

  * Visually impaired people

    Vehicle was at low speed

    BUT difficult to assess calmness of surroundings

    HOWEVER possible to set upper limit of background noise

- In the future, for standardization, Japan is going to advance the consideration on the sound which has the similar perception to ICE based on the results of questionnaires.

Ministry of Land, Infrastructure, Transport and Tourism

Thank you very much for your attention