

2304C. A cross-cultural study on health- related traffic accidents in Asian countries

PL
Member

Masaya Takahashi, Director, Research Center for Overwork-Related Disorders, National Institute of Occupational Safety & Health
Migiwa Asano, Professor, Department of Forensic Medicine, Ehime University School of Medicine
Kazuko Okamura, Director, Research Office, National Research Institute of Police Science
Takashi Ohguchi, Professor, Institute of Industrial Science, The University of Tokyo
Kazuhiro Ota, Professor, Senshu University School of Commerce
Takeshi Tanikawa, Senior Professor, Department of Public Health, Juntendo University Graduate School of Medicine
Kenji Doi, Professor, Graduate School of Engineering, Osaka University

Special
Researcher

Shiho Kunimatsu, Deputy Director, Nishi-Kasai and Inoue Eye Hospital
Huiqing Jin, Director, Anhui Sanlian Institute for Incident Prevention
Fumihito Fukushima, Chief, Department of Emergency Medicine, Saitama Saiseikai Kazo Hospital
Yusuke Okuyama, Manager, Kuroi Transportation Education Center, Kuroi Sangyo Co.
Naricha Chirakalwasan, Chulalongkorn University
Myo Nyein Aung, Specially Appointed Professor, Juntendo University School of International Liberal Studies
Hiroo Wada, Professor, Department of Public Health, Juntendo University Graduate School of Medicine
Ryutaro Shirahama, Part-time Lecturer, Department of Hygiene and Public Health, Juntendo University School of Medicine
Kiyohide Tomooka, Assistant Professor, Department of Hygiene and Public Health, Juntendo University School of Medicine
Setsuko Sato, Associate Professor, Department of Hygiene and Public Health, Juntendo University School of Medicine
Yuito Ueda, Assistant Professor, Department of Hygiene and Public Health, Juntendo University School of Medicine
Zhu Qinye, Ph.D. Department of Public Health, Juntendo University Graduate School of Medicine
Zhung Yan, Ph.D. Department of Public Health, Juntendo University Graduate School of Medicine
Huang Jiaqi, Juntendo University Graduate School of Medicine, Department of Public Health, Master's Course

Observer

Takashi Ueda, Specialist, Safety Policy Division, Logistics and Road Transport Bureau, Ministry of Land, Infrastructure, Transport and Tourism
Daisuke Inoue, Chief, Laws and Regulations Section, Traffic Planning Division, Traffic Bureau, National Police Agency
Yo Tanaka, Assistant Director, Driver's License Division, Traffic Bureau, National Police Agency
Takashi Matsuyama, Chief, Driver's License Section, Traffic Bureau, National Police Agency

Health-related accident

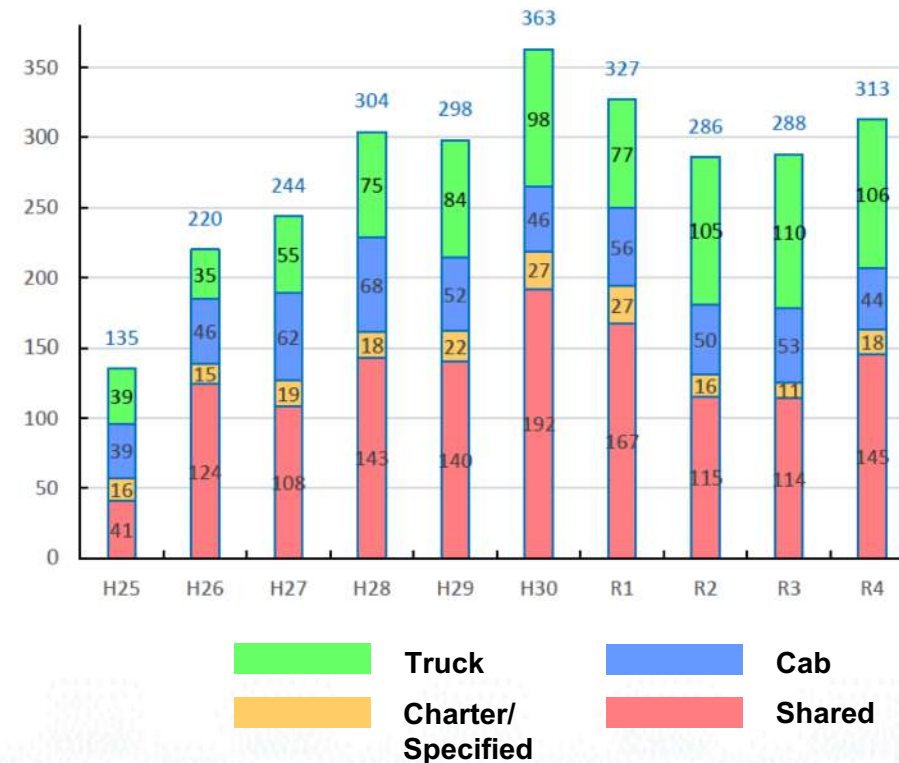
- Definition of Ministry of Land, Infrastructure, Transport and Tourism:

“The driver is unable to continue to operate the commercial motor vehicle due to illness.”

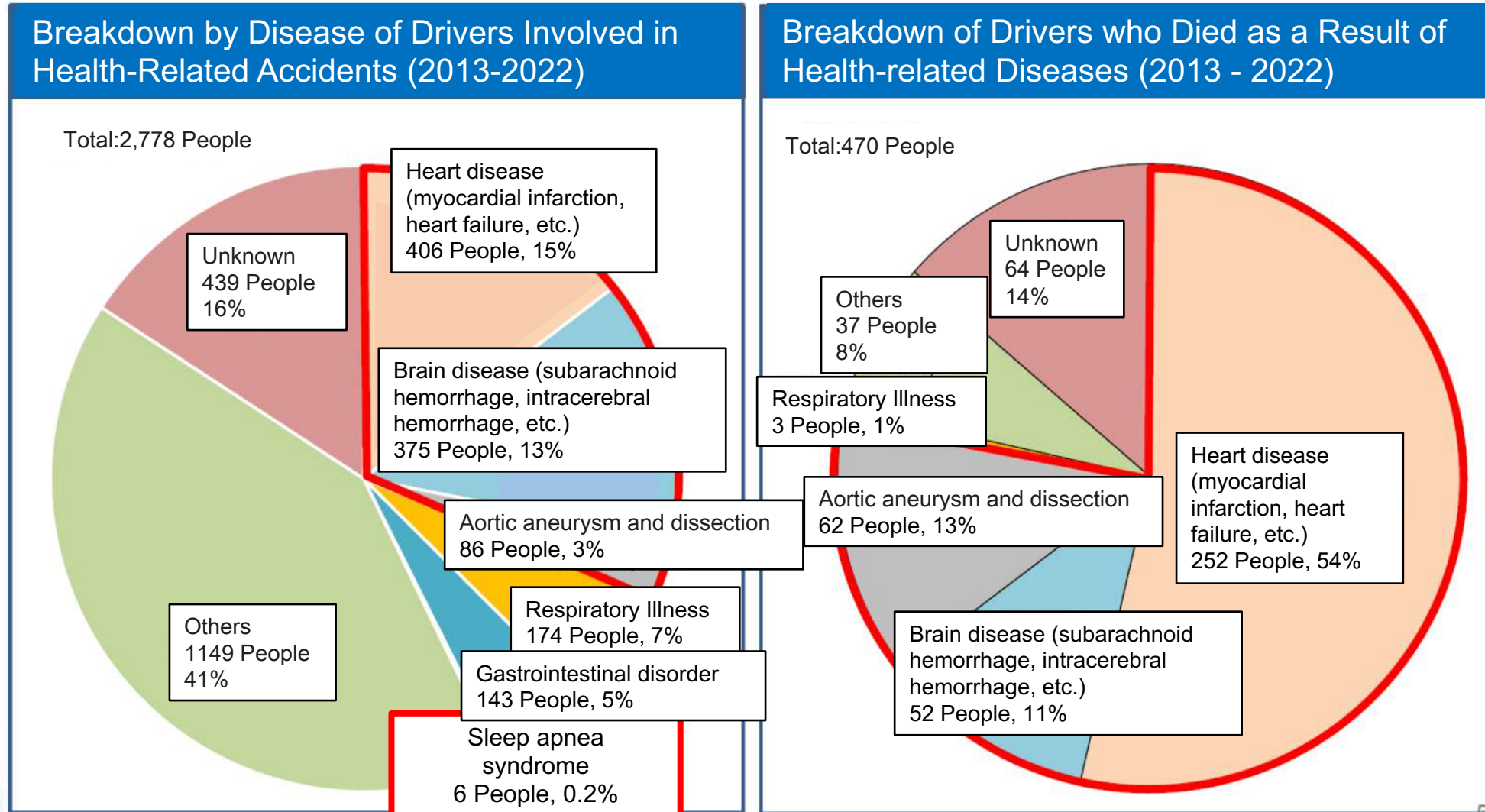
(Article 2 of the Automobile Accident Reporting Regulations)

- The number of reported health-related accidents has been on the rise since 2013, and although it has remained high in recent years, further reduction is needed.
- Prevention of health-related accidents is an important issue in traffic accident prevention.

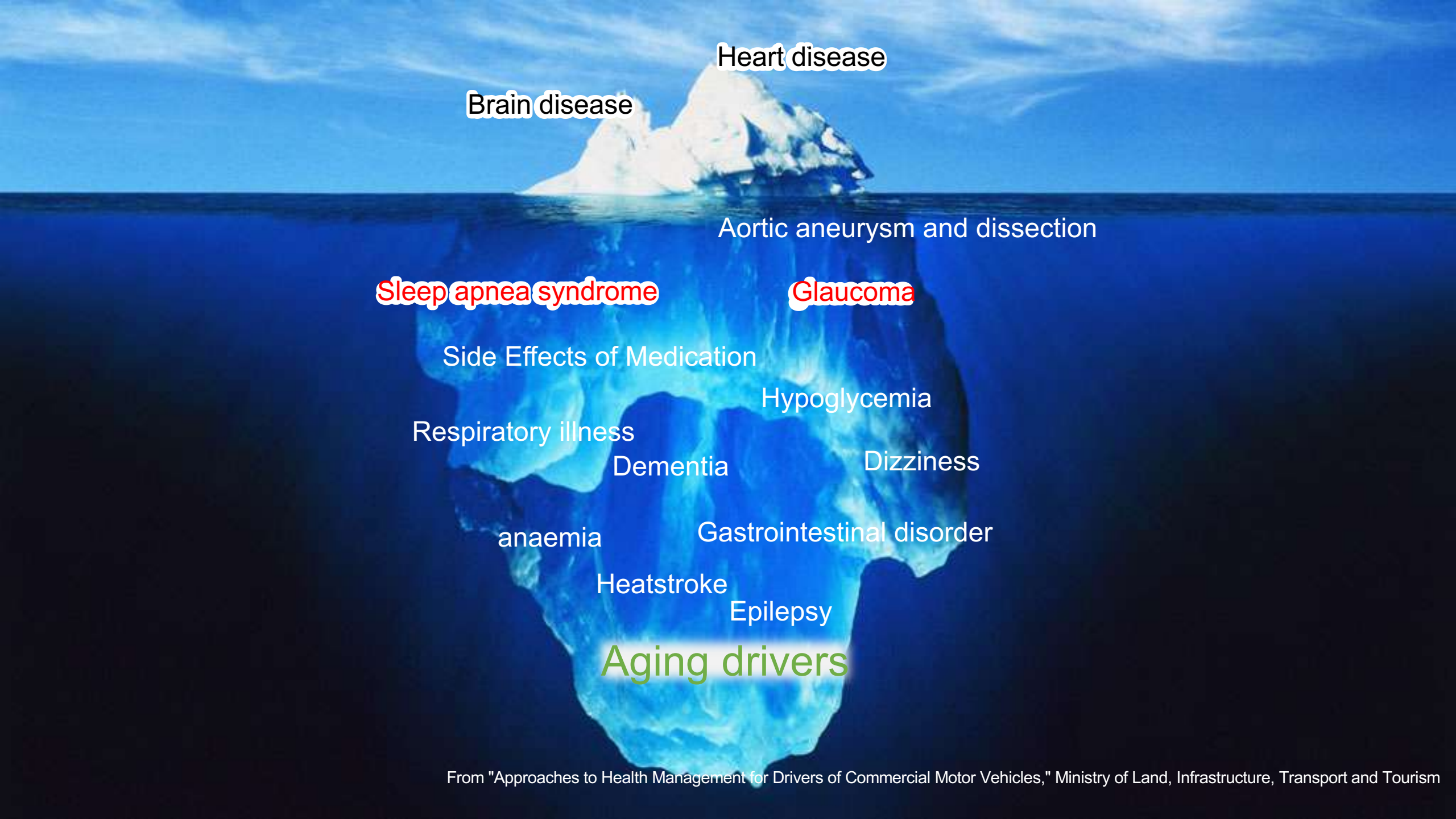
Number of accidents reported due to health conditions
(Number of cases per business category)



Causes of health-related accidents



From "Health-Related Accidents and Efforts to Prevent Health-Related Accidents," Ministry of Land, Infrastructure, Transport and Tourism
https://www1.mlit.go.jp/jidosha/anken/03safety/resourse/data/seminar2024_2-2.pdf



Heart disease

Brain disease

Aortic aneurysm and dissection

Sleep apnea syndrome

Glaucoma

Side Effects of Medication

Hypoglycemia

Respiratory illness

Dementia

Dizziness

anaemia

Gastrointestinal disorder

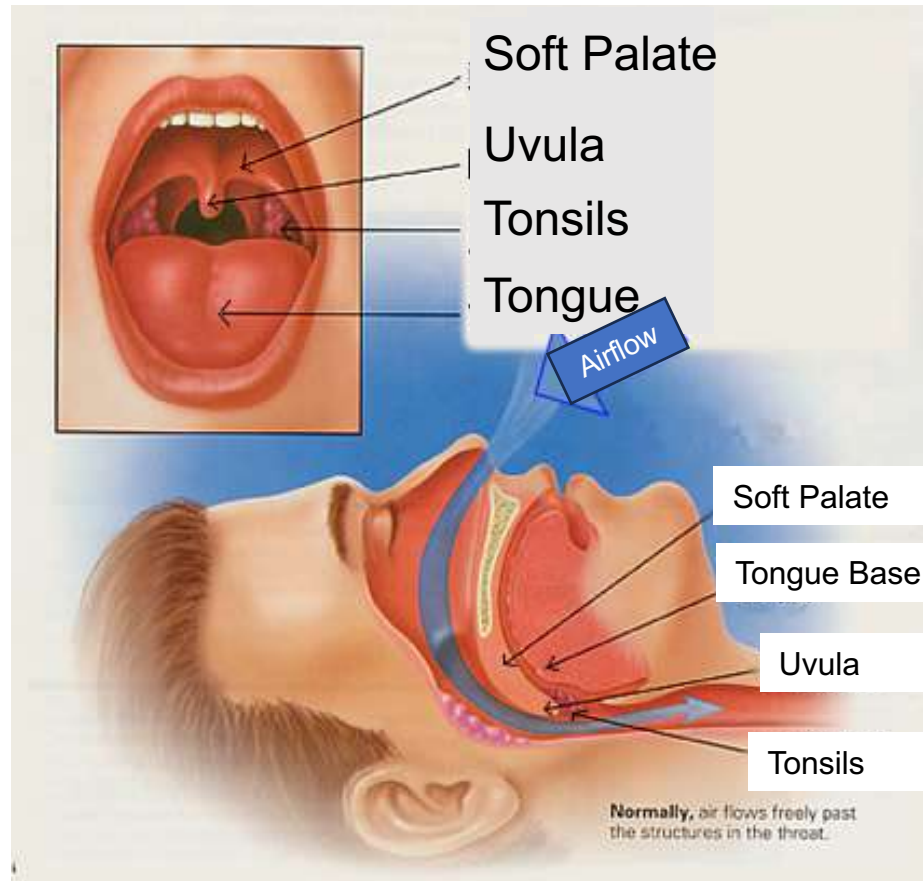
Heatstroke

Epilepsy

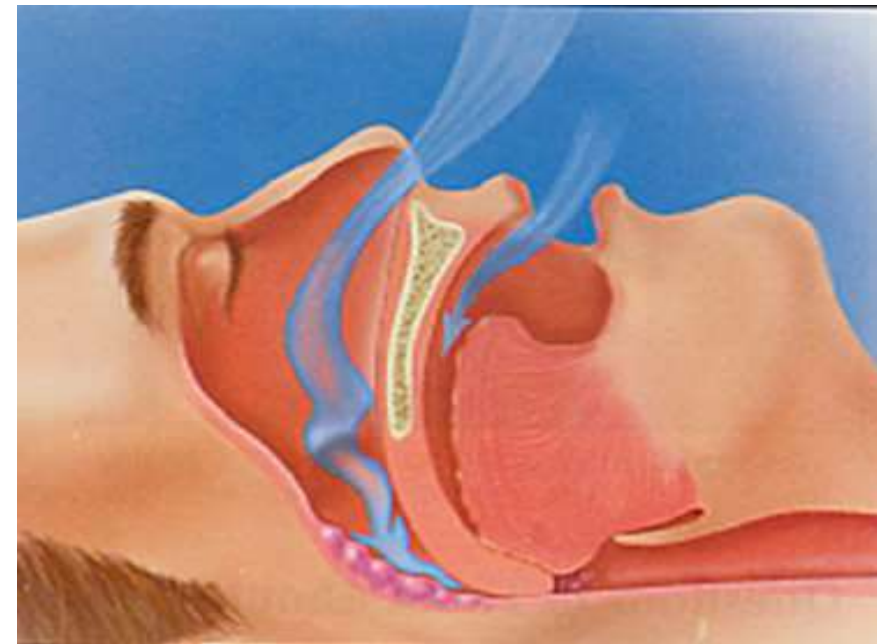
Aging drivers

Sleep Apnea Syndrome

SAS: Sleep Apnea Syndrome



Under normal conditions, the upper airway does not close and airflow is maintained even when lying down to sleep.



- frequent oxygen deprivation
- Arousals to open the airway, resulting in fragmented sleep and poor sleep quality increases drowsiness the next day.

Relationship between perceived sleepiness and prevalence of sleep-disordered breathing

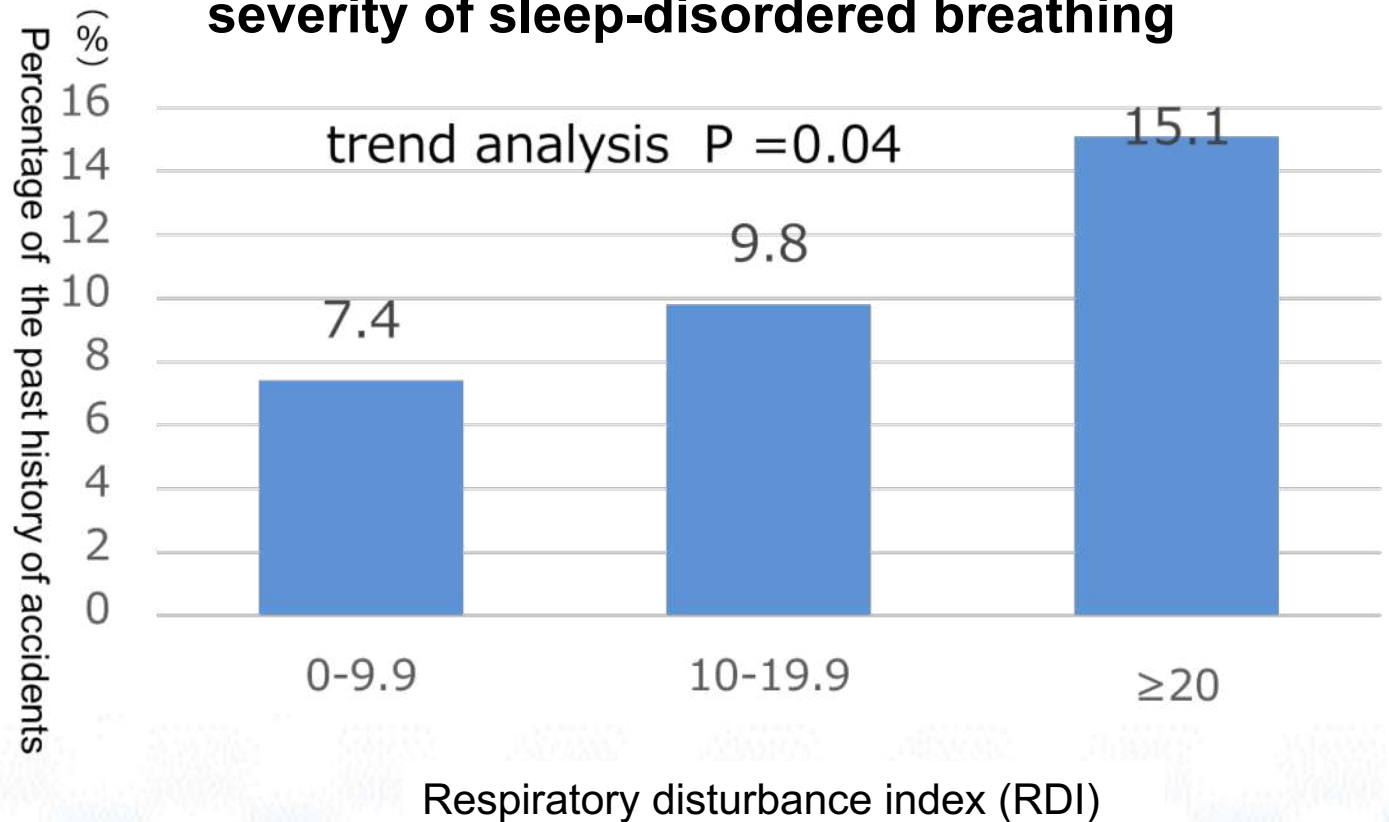
Judging by ESS scores alone, there is a risk missing 86% of the seriously ill.

| | | sleep-disordered breathing | | | | Total |
|--|------------|-----------------------------------|----------------------------------|---------------------------|------------------------------|-----------------|
| | | Normal range (RDI less than 5) | Slight degree (RDI 5 to 19.9) | Moderate (RDI 20-39.9) | severe (RDI 40 or higher) | |
| Weak ↑ Awareness of drowsiness | ESS 0 to 5 | 1,457 (60%) | 1,391 (60%) | 201 (53%) | 46 (36%) | 3,095 (100%) |
| | ESS 6-10 | 774 (32%) | 725 (31%) | 138 (37%) | 52 (40%) | 1,689 (100%) |
| | ESS 11-15 | 142 | 170 | 34 | 23 | 369 |
| NOSSA: non sleepy sleep apnea Sleep apnea without subjective sleepiness | | | | | | |
| Total | | 2,410 (100%) | 2,330 (100%) | 378 (100%) | 129 (100%) | 5,247 (100%) |

Sleep-disordered breathing and traffic accidents



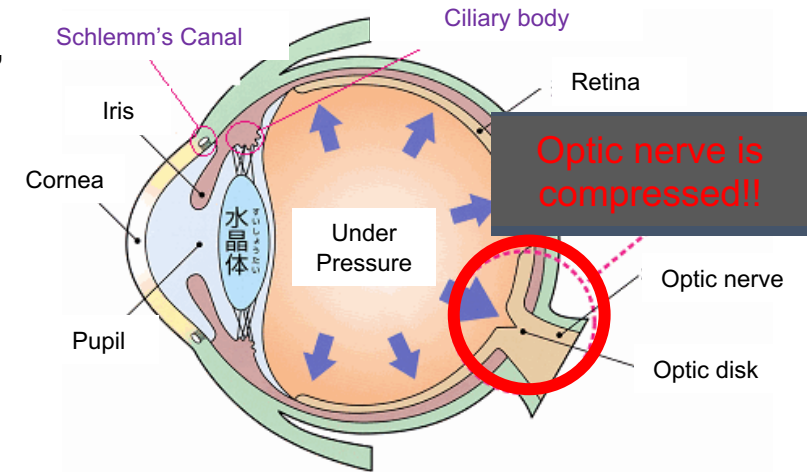
Percentage of accidents experienced by severity of sleep-disordered breathing



From H2535, H2651, and H2763 (Collaboration with government and organizations) project research reports

Glaucoma

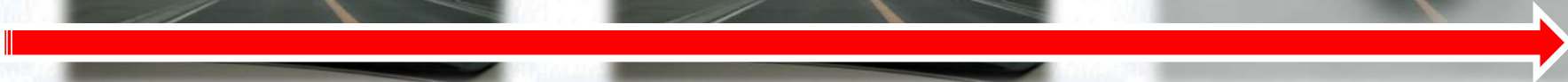
- Glaucoma: A disease in which the optic nerve is damaged for some reason, resulting in a narrowing of the visual field (range of vision)
- The prevalence rate among Japanese over 40 is 5.0% (1 in 20).
- Estimated 4.6 million patients in Japan (2015).
- Early detection and appropriate treatment of glaucoma can slow its progression.



90% of glaucoma patients are untreated and unaware



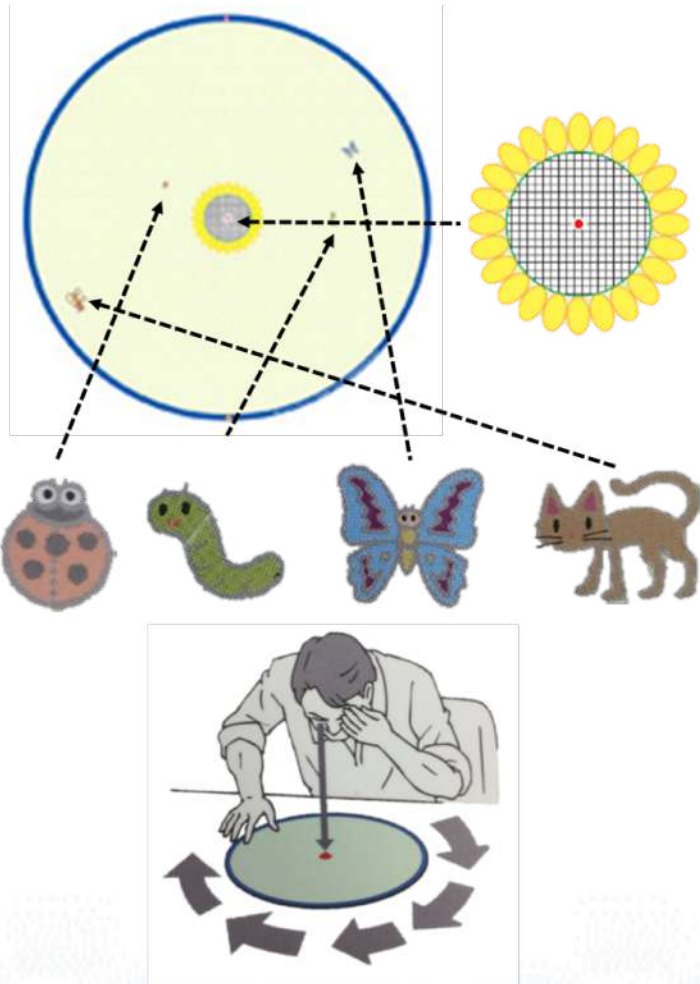
progress



Percentage of glaucoma unaware or untreated patients by stage of glaucoma in 250 patients with glaucoma who visited the Department of Ophthalmology, Tajimi City Hospital

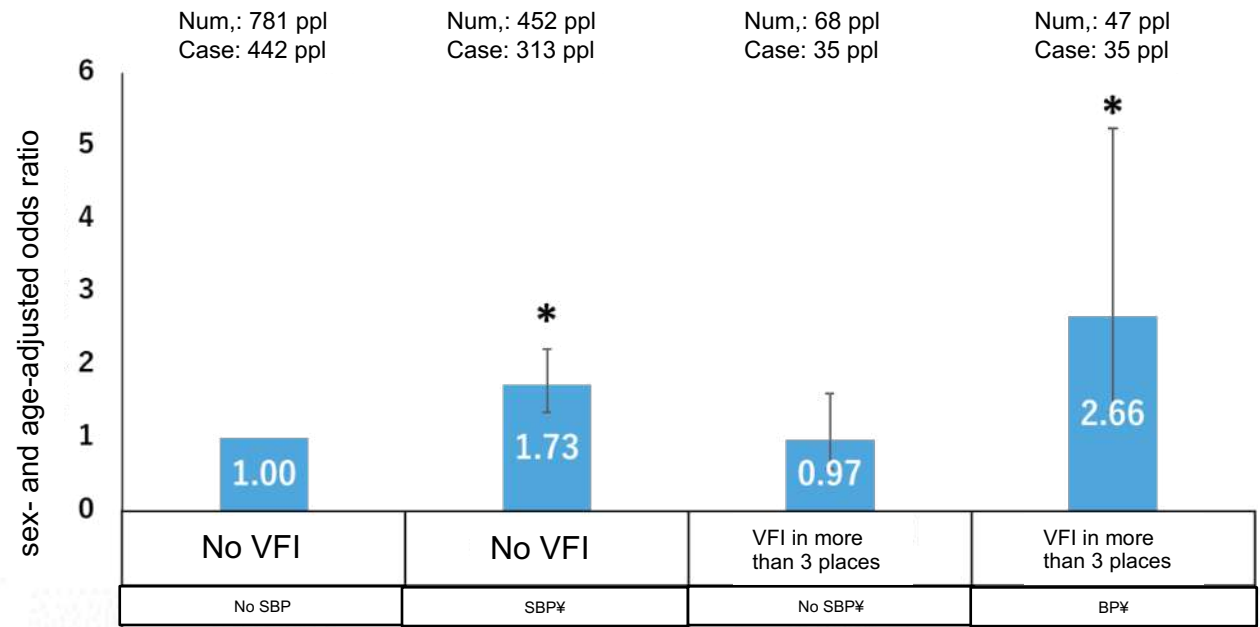
| | Unaware (Untreated) | Diagnosed with glaucoma and undergoing treatment | Diagnosed with glaucoma but untreated | Total |
|--|--------------------------------|---|--|--------------|
| Initial ~-6dB | 140/149 (94.0%) | 3/149 (2.0%) | 6/149 (4.0%) | 149 |
| Glaucoma has no symptoms in the early, middle, or late stages | | | | |
| term -12dB~ -6dB | 51/56 (91.1%) | 4/56 (7.1%) | 1/56 (1.8%) | 56 |
| final -12dB~ | 41/45 (91.1%) | 3/45 (6.7%) | 1/45 (2.2%) | 45 |

Visual Field Impairment and Traffic Accidents



Clock chart

Combination of visual field impairment(VFI) in three or more places and surprise box phenomenon(SBP) associated with traffic



* P<0.05

Combination of visual field impairment in three or more places and surprise box phenomenon

Accidents logistic regression analysis

*Excluded those with one or two visual field impairment

From 1707A, 1807B, and 1907C (Independent Study) Project Research Reports



Fiscal 2020 Social Contribution Projects

International Symposium of Social Contribution Project,
International Association of Traffic and Safety Sciences

A disease may be the
cause of that accident...

Toward the Prevention of Health-Related Accidents

- An online international symposium was held with experts from Japan, China, and Thailand.
- During the exchange of opinions, it was found that in the Asian region, measures for health-related accidents have not yet been fully implemented, and people's awareness has not yet been raised.



Public Awareness Video



Sleep apnea driving picture scroll



Glaucoma Driving Picture Scroll



Sleep apnea and traffic accidents



Glaucoma and traffic accidents

Proposed Implementation Details and Schedule

2021

- ▶ Create foreign language versions of public awareness videos
- ▶ Questionnaire survey after viewing educational videos

2022

- ▶ Further promotion in Japan
- ▶ Holding an international symposium in Thailand and conducting a questionnaire survey after viewing an educational video

2023

- ▶ Further promotion in Japan
- ▶ An international comparison of post-viewing awareness-raising video questionnaires in Japan, China, and Thailand

Creation of foreign language versions of educational videos (English, Chinese, Thai)

Available on the IATSS website, "Video Archive"!



<https://www.iatss.or.jp/movie/>



日本語バージョン



日本語バージョン



英語バージョン



中国語バージョン



タイ語バージョン



英語バージョン



中国語バージョン



タイ語バージョン



日本語バージョン



日本語バージョン



英語バージョン



中国語バージョン



タイ語バージョン



英語バージョン



中国語バージョン



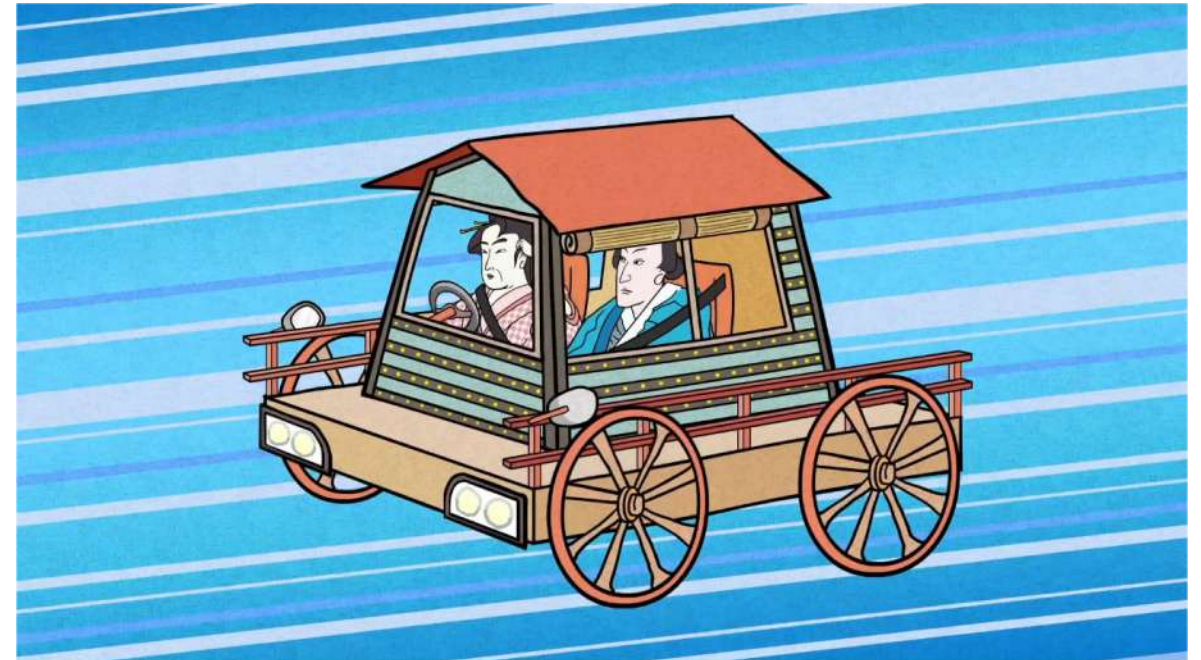
タイ語バージョン



Foreign language versions of public awareness videos



**Sleep apnea driving picture scroll
(Thai version)**



**Glaucoma Driving Picture Scroll
(Chinese version)**

International Association of Traffic and Safety Sciences
International Symposium

Prevention of Health-related Traffic Accidents

~Obstructive Sleep Apnea Syndrome and Glaucoma~

Monday,
January 9th, 2023
10:00–12:00 (THA)

- On-site Symposium
- Participation is Free of Charge

Venue

King Chulalongkorn Memorial
Hospital, Bangkok, Thailand
Bhumisiri Mangkhalanusorn
Building, 12fl, room 1201

Registration

For registration,
please visit following URL.



https://www.iatss.or.jp/en/thai_symposium/

[Contact]
International Association of Traffic and Safety
Sciences
tomishima.s@iatss.or.jp



Sponsored by International Association of Traffic and Safety Sciences,
Juntendo University and Chulalongkorn University

PROGRAM

10:00–10:05 Opening Remarks
Takeshi Tanigawa English

Symposium

Professor & Chairman, Department of Public Health,
Juntendo University Graduate School of Medicine
Chair: Tayard Desudchit
Associate Professor, Division of Pediatric Neurology,
Department of Pediatrics, Faculty of Medicine,
Chulalongkorn University

10:05–10:25



Kenji Doi English
Professor, Department of Global Architecture, Graduate
School of Engineering, Osaka University
"Types and assumed causes of traffic accidents in
Thailand and ASEAN"

10:25–10:45



Naricha Chirakalwasan English
Associate Professor, Division of Pulmonary and Critical Care
Medicine, Department of Medicine, Faculty of Medicine,
Chulalongkorn University
"Sleep apnea and road safety in Thailand: current
status and issues"

10:45–11:05



Takeshi Tanigawa English
Professor & Chairman, Department of Public Health,
Juntendo University Graduate School of Medicine
"Sleep apnea and Glaucoma: screening in Japan"

11:05–11:20 Viewing of promotional videos and
answering the questionnaires Thai

11:20–11:25 Break

11:25–11:55 General discussion & QA English and Thai

11:55–12:00 Closing Remarks
Secretariat Office

PROGRAM

10:00–10:05 Opening Remarks English

Takeshi Tanigawa

Professor & Chairman, Department of Public Health,
Juntendo University Graduate School of Medicine

Symposium

Chair: Tayard Desudchit

Associate Professor, Division of Pediatric Neurology,
Department of Pediatrics, Faculty of Medicine,
Chulalongkorn University

10:05–10:25



Kenji Doi English

Professor, Department of Global Architecture, Graduate
School of Engineering, Osaka University
"Types and assumed causes of traffic accidents in
Thailand and ASEAN"

10:25–10:45



Naricha Chirakalwasan English

Associate Professor, Division of Pulmonary and Critical Care
Medicine, Department of Medicine, Faculty of Medicine,
Chulalongkorn University
"Sleep apnea and road safety in Thailand: current
status and issues"

10:45–11:05



Takeshi Tanigawa English

Professor & Chairman, Department of Public Health,
Juntendo University Graduate School of Medicine
"Sleep apnea and Glaucoma: screening in Japan"

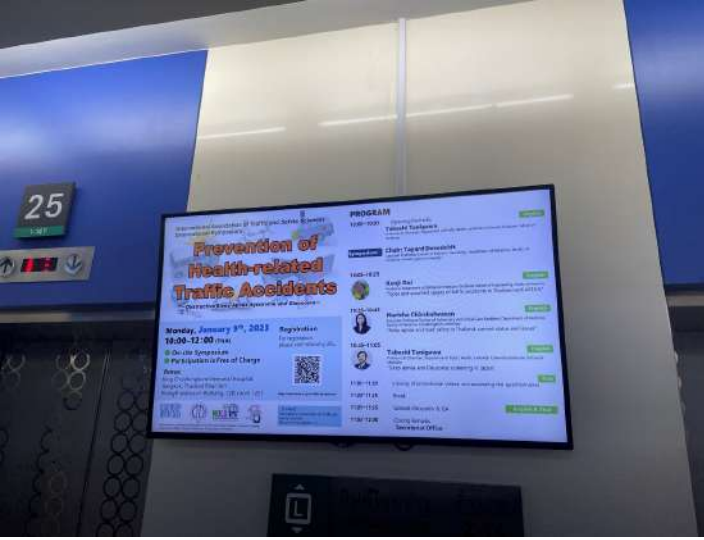
11:05–11:20 Viewing of promotional videos and
answering the questionnaires Thai

11:20–11:25 Break

11:25–11:55 General discussion & QA English and Thai

11:55–12:00 Closing Remarks
Secretariat Office





Purpose of this project

In FY2023, we conducted a questionnaire survey in Japan, China, and Thailand using the public awareness videos in foreign languages (English, Chinese, and Thai). The purpose of the survey was to verify the usefulness of the videos and to compare the awareness of health-related accidents internationally.

Details of this project

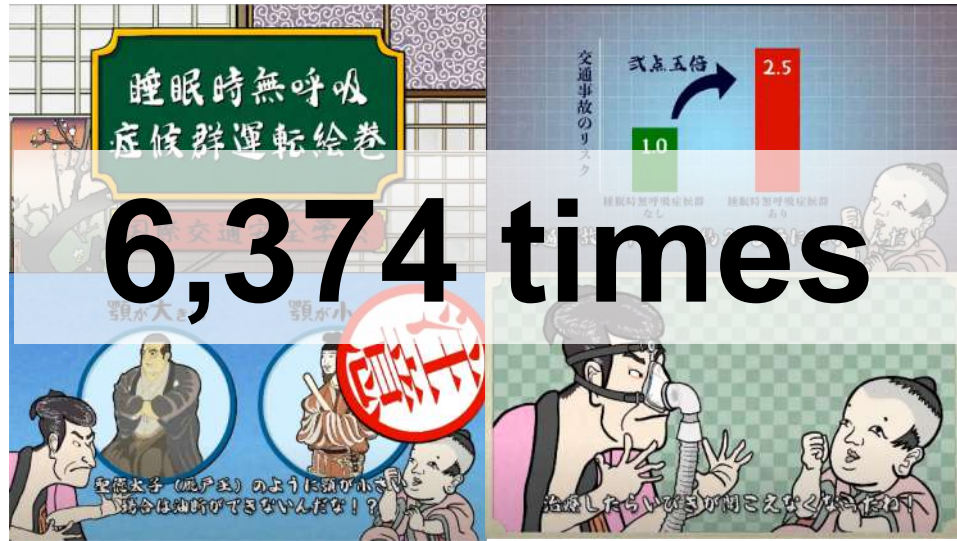
- Spreading awareness of health-related accident prevention in Japan
- Post-viewing questionnaire for educational videos in Japan, China, and Thailand and international comparison

Spreading awareness of health-related accident prevention in Japan



Views of public awareness videos

As of March 18, 2024



6,374 times

Sleep Apnea Driving Picture Scroll



4,770 times

Glaucoma Driving Picture Scroll



3,347 times

Sleep apnea and traffic accidents



43,441 times

Glaucoma and traffic accidents

FY2021 Utilization of Awareness Video

(Questionnaires were also conducted after viewing the awareness-raising videos)

- Kokusai Jidosha Co., Ltd.
- **Kuroi Industry Co., LTD.**  Approximately 450 people participated in the event!
- Sompo Japan Insurance Inc.
- SOMPO Risk Management Inc.
- Honda Kaihatsu Co.,Ltd.
- **Japan Automobile Federation (JAF)**  Approximately 2,700 people participated
- **Tokio Marine & Nichido Fire Insurance Co.**  Approximately 200 people participated in the event!
- National Car Rental Association
- Other (e.g., organizations affiliated with project members)

Utilization at Driver's License Examination Center

- Distributed DVDs to 51 prefectural police departments nationwide.
- Distributed by each prefecture to Driver's License Examination Offices.



Monitor in the lobby of Saitama Prefectural Police Driver's License Center



During a senior citizen training course conducted by the prefectural police.

Clear files were created!

睡眠時無呼吸症候群とは？

成人の4人に1人がこの病気をもっています。上気道の閉塞などが原因で、いびきをかいたり、睡眠中に何回も呼吸が止まります。睡眠不足となり、日中の強い眠気や注意力低下の原因になります。

4人に一人

代々5倍

1.0 → 2.5

自覚のない眠気に注意！

睡眠時無呼吸症候群の主な症状として、日中の強い眠気があります。実は眠気を自覚しない患者さんも多く存在します。特に、マイクロスリープという突然に数秒から数十秒の間眠りを引き起こす現象は、交通事故の原因となり、そのリスクは約2.5倍とされています。

やせている人も注意が必要です！

睡眠時無呼吸症候群の主な原因は肥満であることが知られていますが、実は日本人は痩が小さいことから、やせている人でも睡眠時無呼吸症候群に罹りやすいといわれています。

このような症状はありませんか？

これらの症状がいくつか当てはまる場合、専門医療機関の受診を検討してください。

- ① いびきがうるさいといわれた
- ② 睡眠中に呼吸が止まっている、またはとどろき覚めた
- ③ しっかり眠っているのに、日中に眠い
- ④ 原因病に罹ってしまったことがある
- ⑤ 朝起きた時に頭痛がする
- ⑥ なんとなく集中力が低い、又はそうだとされた
- ⑦ 鼻漏に何度も苦しんでいる

早期発見 早期治療

健康起死事故防止のための啓発動画はこちら！
<https://www.iatss.or.jp/movie/>

IATSS 公益財団法人 国際交通安全学会
 International Association of Traffic and Safety Sciences

その事故、睡眠時無呼吸症候群が原因かも...

早期発見 早期治療

健康起死事故防止のための啓発動画はこちら！
<https://www.iatss.or.jp/movie/>

IATSS 公益財団法人 国際交通安全学会
 International Association of Traffic and Safety Sciences

線内障に気付かないことで、事故の危険を高めることがあります。

線内障の運転リスクとは

線内障では下記のように視野（見えている範囲）が狭くなり部分的に見えなくなるため、気づかず運転を続けていると交通事故の原因になります。

正常な方の視野 vs **線内障の方の視野**

信号機が見えない！
 歩行者が見えない！

線内障とは？

70歳以上は1人、70歳未満は2人

視神経が障害されることで視野が狭くなる病気です。線内障患者は、40歳以上の20人に1人、70歳以上では9人に1人もいわれています。また、線内障は徐々に進行するため自覚症状がなく、多くの方が治療を受けていないといわれています。

このような出来事はありませんか？

このような出来事を1つでも経験したことがある場合、眼科の受診を検討してください。

- ① 運転中、道路から車が出てきたり、人が飛び出してきたことがある。
- ② 歩行者との距離感から危ない運転と指摘されたことがある。
- ③ 信号や標識がわかりづらかったことがある。
- ④ 道路の車の流れにのれないことがある。

線内障の治療法

点眼薬（目薬）や手術によって眼圧を下げることで、進行をゆっくりにする、あるいは、進行をくい止めることができます。

健康起死事故防止のための啓発動画はこちら！
<https://www.iatss.or.jp/movie/>

IATSS 公益財団法人 国際交通安全学会
 International Association of Traffic and Safety Sciences

もしかして線内障!?

あなたは
見えて
見えますか!?

健康起死事故防止のための啓発動画はこちら！
<https://www.iatss.or.jp/movie/>

早期発見、早期治療、治療の継続により、運転寿命を伸ばしましょう！

IATSS 公益財団法人 国際交通安全学会
 International Association of Traffic and Safety Sciences

FY2022 Utilization of Awareness Video

- Glaucoma Driving Picture Scrolls was published in “A Practitioner’s Guide to Teaching Older License Holders”.
- A public awareness video is posted on the Kanto Traffic Mutual Aid Cooperative Association's website (<https://www.kankokyo.or.jp/anzen/action.htm>).

健康起因事故防止支援リンク集

事業者が取り組む安全対策：運転者の健康管理にご利用いただけます。

| 健康起因事故防止支援リンク集 | |
|--|-----------------|
| 出典元 | 掲載HP |
| 事業用自動車の運転者の健康マニュアル (PDF) | 国土交通省 自動車交通局 |
| 自動車運送事業者における睡眠時無呼吸症候群対策マニュアル (PDF) | |
| 自動車運送事業における脳血管疾患対策ガイドライン (PDF) | |
| 自動車運送事業者における心臓疾患・大血管疾患対策ガイドライン (PDF) | |
| 自動車運送事業者における視野障害対策マニュアル (PDF) | |
| e-ヘルスネット | 厚生労働省関連 |
| 標準的な運動プログラム | |
| 健康寿命をのぼそう！Smart Life Project | |
| 独立行政法人 労働者健康福祉機構 | 国際交通安全学会 |
| 緑内障運転絵巻 (アンケート有) | |
| 緑内障と交通事故(アンケート有) | |
| 睡眠時無呼吸症候群運転絵巻(アンケート有) | |
| 睡眠時無呼吸症候群と交通事故(アンケート有) | |

Spreading awareness of video through the National Police Agency



Manual on Measures to Prevent Visual Field Failure in Motor Carriers

- The "Comprehensive Safety Plan 2025 for Commercial Vehicles" released in March 2021 states that "As a measure for elderly drivers, elderly will be informed of driving risks related to visual field disorder and recommend that they undergo screening tests and visual field examinations at ophthalmology clinics, etc."
- A working group was established at the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), with participation by this project member Mr. Ueda (MLIT) and Dr. Kunimatsu (Inoue Eye Hospital, Nishi-Kasai).
- In March 2022, the "Manual on Measures to Prevent Visual Failure in Motor Carriers" was formulated.

Manual on countermeasures
against visual field pollution in
motor carriers



March 29, 2022

Automobile Bureau, Ministry of Land,
Infrastructure, Transport and Tourism

FY2023 Actual use of educational videos

- Shinki Bus Co., Ltd: Himeji City, Hyogo
- National Agency for Automotive Safety & Victims' Aid (NASVA): Sumida-ku, Tokyo
- Toyota Mobility Foundation: Bunkyo-ku, Tokyo
- Tokyo Metropolitan Medical Association: Chiyoda-ku, Tokyo
- Odakyu Bus Co., Ltd: Chofu City, Tokyo
- Kanto Traffic Mutual Aid Cooperative Society: Shinjuku-ku, Tokyo
- Hatsukaichi Kotsu : Hatsukaichi City, Hiroshima
- Chiba City Bus : Chiba City, Chiba



Toyota Mobility Fund

Can glaucoma cause you to not see traffic lights? A Story of Visual Field Impairment
(Interview with Dr. Shiho Kunimatsu, Inoue Hospital , ophthalmology, Nishi-Kasai)

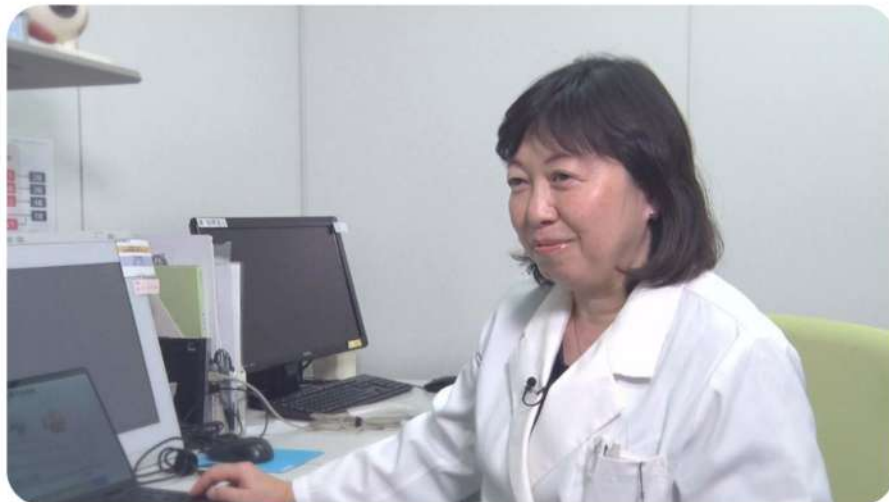
Has this ever happened to you all?

A passenger pointed out to you saying, "You almost ran a red light."

Or You have been walking and suddenly almost hit someone.

Maybe it was not "carelessness" but a symptom caused by an illness.

In this issue, we asked Dr. Shiho of Inoue Hospital ophthalmology in Nishi-Kasai about visual field impairment and the outpatient driving clinic established by Dr. to reduce traffic accidents caused by visual field impairment.



Introduction of Glaucoma Driving Picture Scroll

- About the glaucoma awareness video created by Dr. Kunimatsu



Dr. Kunimatsu: I made this video in the style of Ukiyoe, especially for elderly to learn about glaucoma in a fun way. I hope people will enjoy watching it. Patients with visual field impairment may think that their vision is exactly the same as that of healthy people, and they have no subjective symptoms. For this reason, I would like to encourage people to visit an ophthalmologist to learn more about your own vision and whether or not you have a disease.

Post-viewing questionnaire for educational videos in Japan, China, and Thailand International Comparison

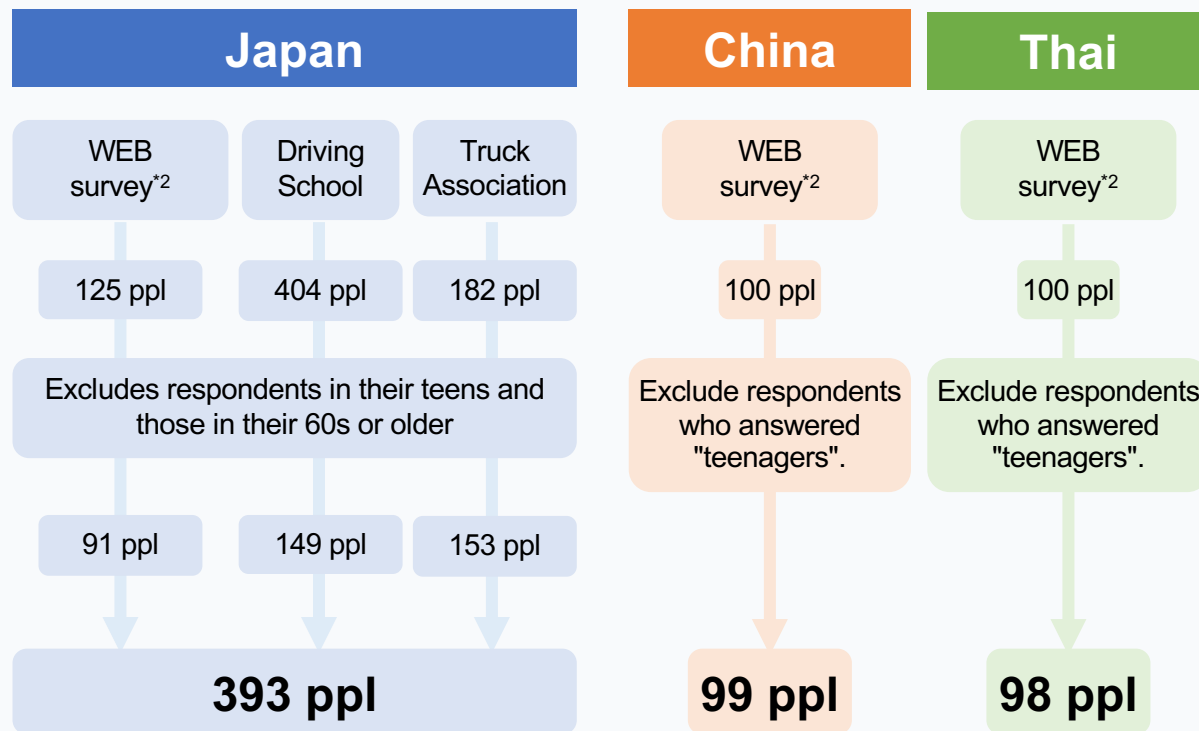
Sleep apnea driving picture scroll

Glaucoma Driving Picture Scroll

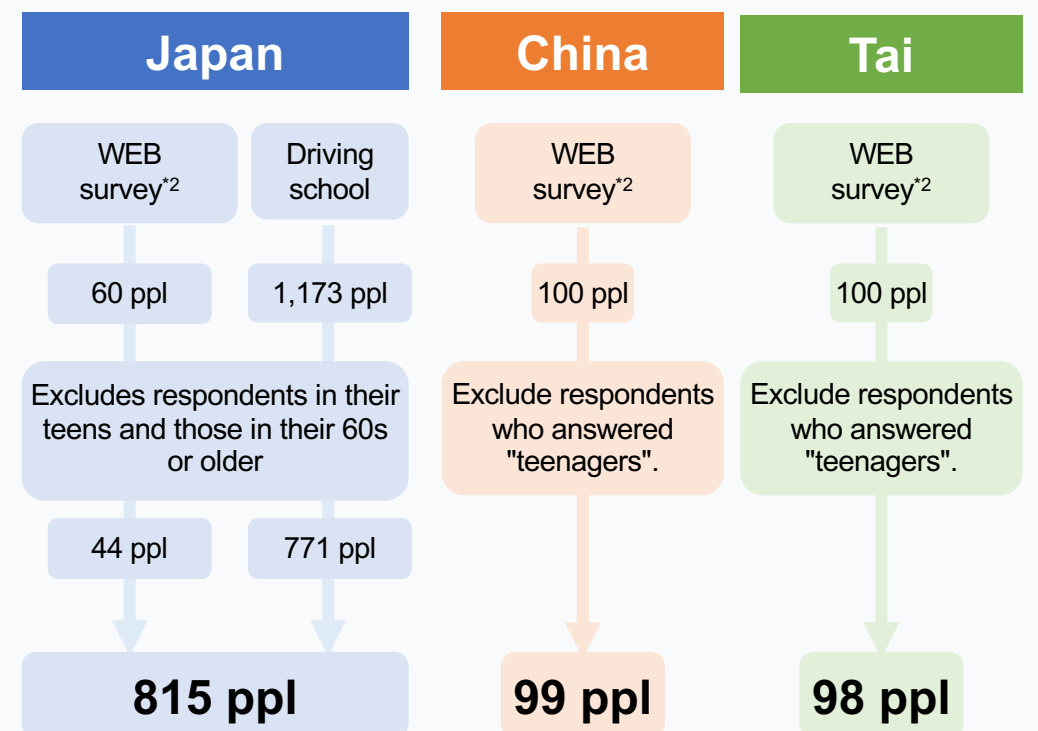


Subjects of the survey

Sleep apnea driving picture scroll*1



Glaucoma Driving Picture Scroll*1



*1 In Japan, the subjects of the sleep apnea driving picture scroll and the glaucoma driving picture scroll were different, but the same subjects were included in China and Thailand.

*2 In Japan, Google Form was used. In China and Thailand, the survey was outsourced to a web-based survey company.

Subject Attributes

Japan
393/815
people

China
99/99 people

Thai
98/98 people

Main occupation, persons (%)

Trucking associations

Company employee
Company owner, etc.
Public servant

58 (59)
33 (33)
5 (5)

Company employee
Self-employed, etc.
Public servant

69 (69)
15 (16)
13 (13)

Major industries, persons (%)

and driving school students

Construction, building, IT and Telecommunications
Other manufacturing

14 (14)
9 (9)
7 (7)

Government
Administration office
Other services
Manufacture of daily necessities, etc.

13 (13)
12 (12)
6 (6)

Main business, persons (%)

Sales
Delivery
Cab

49 (49)
17 (17)
7 (7)

Sales
Cab
Delivery

33 (34)
11 (11)
9 (9)

Questionnaire items (21 questions in total)

- 1 Age
- 2 Gender
- 3 Current Residence
- 4 Please check () the applicable box for frequency of driving.
- 5 Have you ever been diagnosed with sleep apnea/glaucoma?
- 6 Are you aware of the disease sleep apnea/glaucoma?
- 7 Before watching the video, did you know that sleep apnea/glaucoma can cause car accidents?
- 8 After watching the video, do you have a better understanding of sleep apnea/glaucoma and car accidents?
- 9 Was this video useful to you?
- 10 Please rate your overall impression of this video on a scale of 1 to 10.
- 11 Was the duration (length) of the video appropriate?
- 12 Was the video easy to understand?
- 13 Please indicate the reason for your answer to 12.
- 14 Please describe any memorable aspects of the video.
- 15 Do you think this video is useful as an initiative to prevent traffic accidents caused by illness?
- 16 Please indicate the reason for your answer to 15.
- 17 Please answer the following questions about the symptoms of sleep apnea and glaucoma shown in the video.
 - 1) Please check for all that apply to you.
 - 2) Is there anyone in your family, close people at work, etc. who fits this description?
- 18 After watching this video, if you or someone close to you in your family or workplace is suspected of having sleep apnea/glaucoma, would you personally see a health care provider or recommend that person see a health care provider?
- 19 Please provide the reason for your answer to 18.
- 20 What efforts do you think are needed to prevent traffic accidents caused by illness?
- 21 We would love to hear your comments and feedback on this initiative.

1. Age

Japan

China

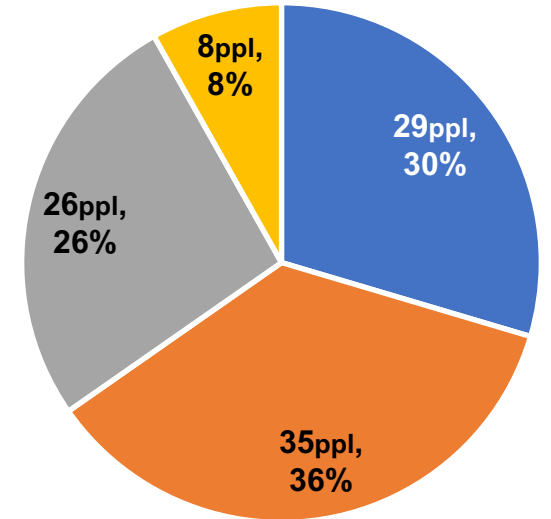
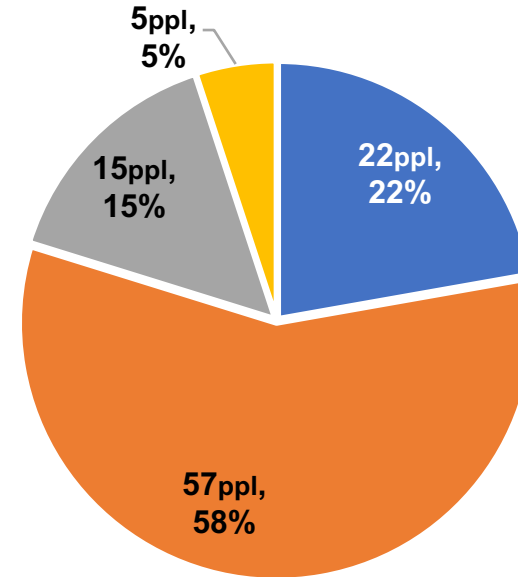
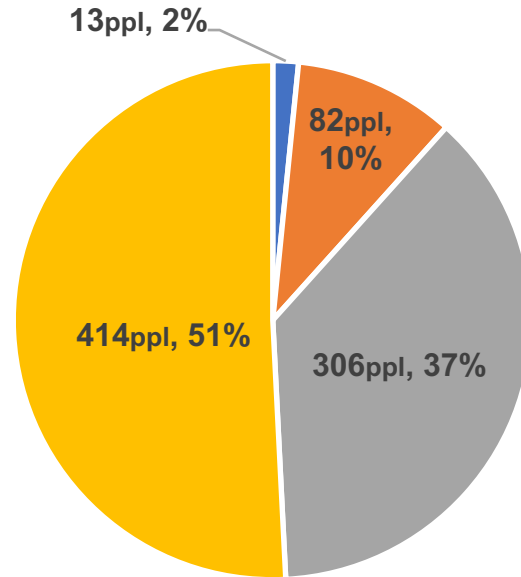
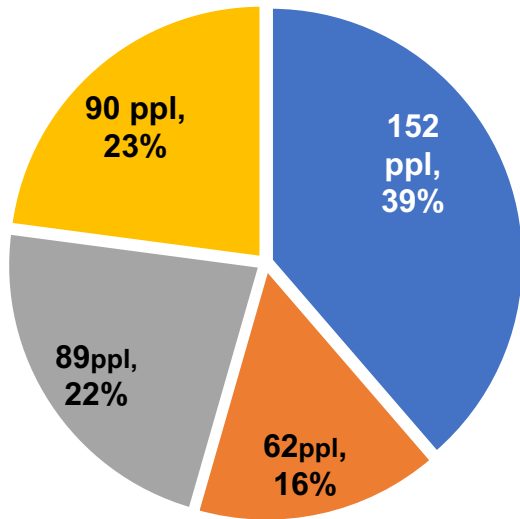
Thailand

N=393

N=815

N=99

N=98



sleep apnea syndrome
picture scroll depicting
scene of driving

Glaucoma Driving
Picture Scroll

■ 20's ■ 30's ■ 40's ■ 50's

2. Gender

Japan

China

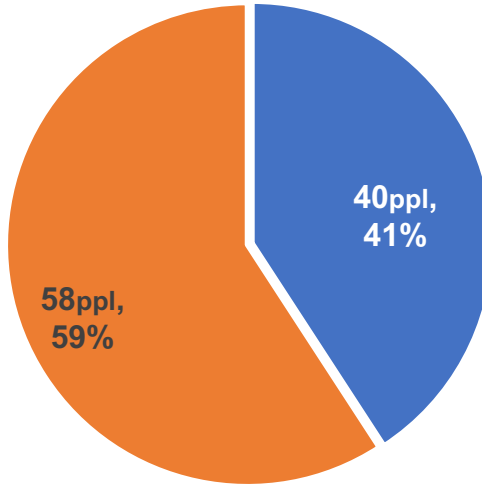
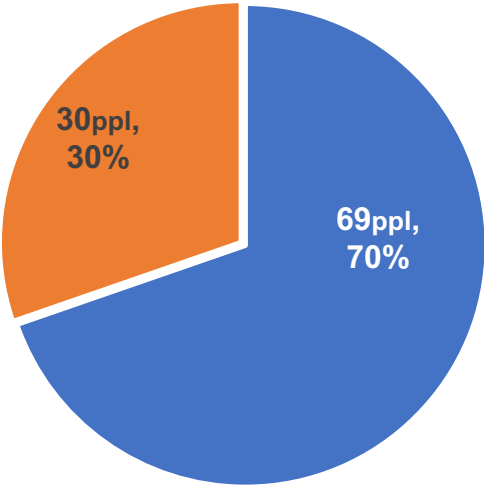
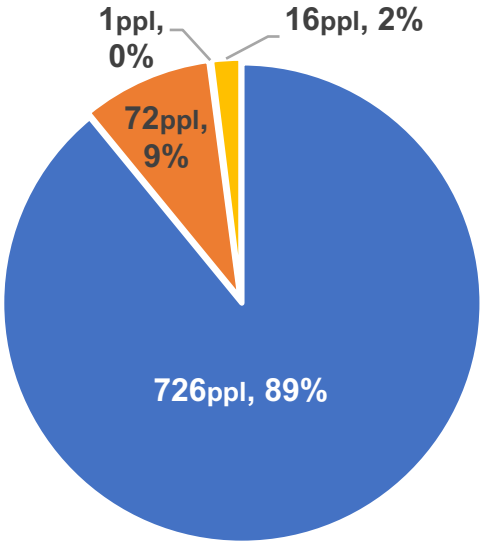
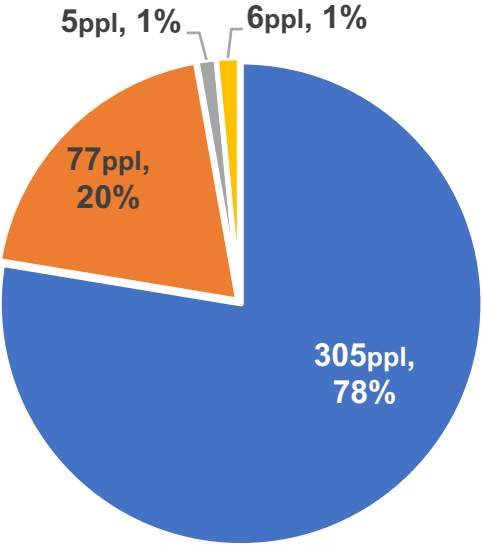
Thailand

N=393

N=815

N=99

N=98



sleep apnea syndrome picture scroll depicting scene of driving

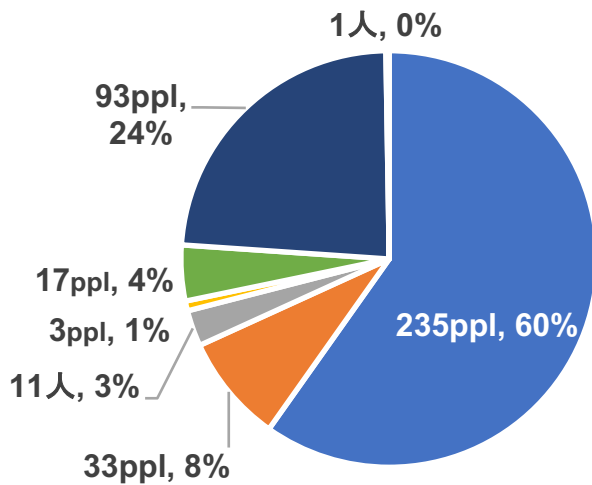
Glaucoma Driving Picture Scroll

Male Female Others No Answer

4. Driving frequency

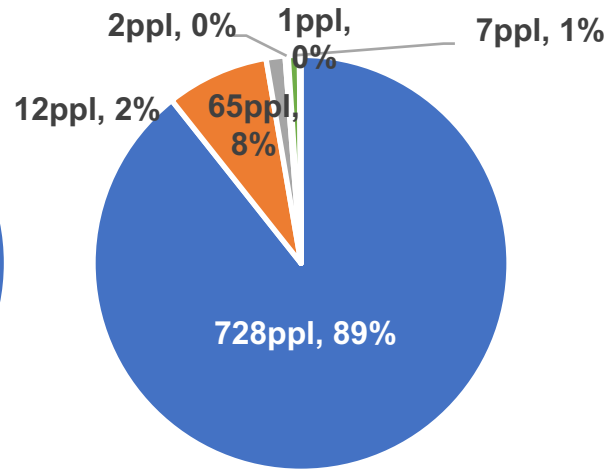
Japan

N=393



Sleep apnea syndrome picture scroll depicting scene of driving

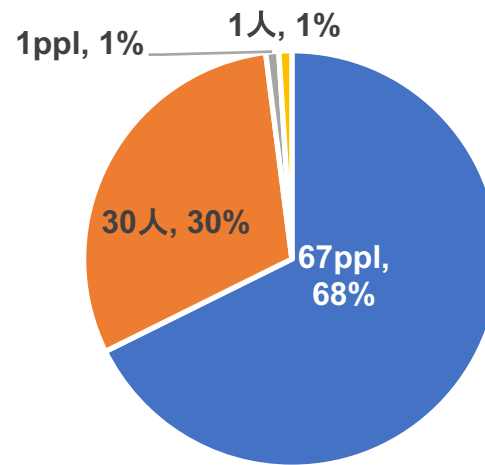
N=815



Glaucoma Driving Picture Scroll

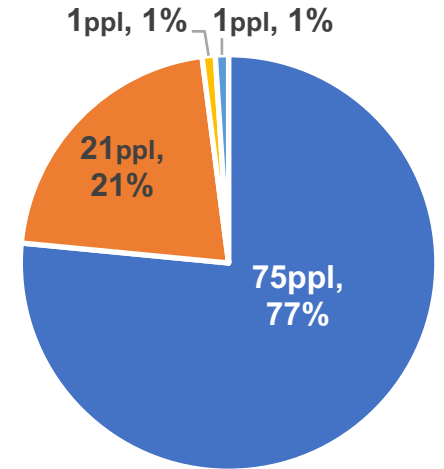
China

N=99



Thailand

N=98

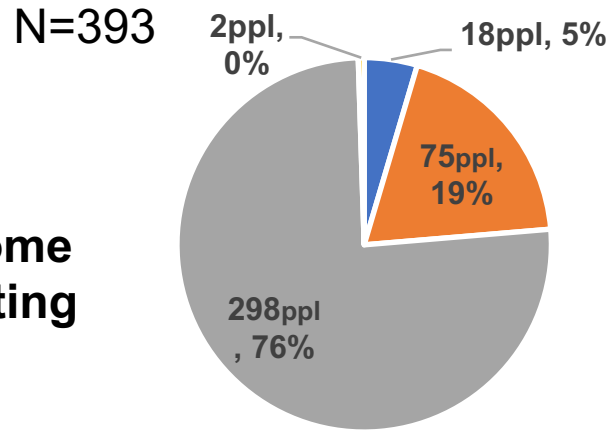


■ Almost every day
 ■ About once per week
 ■ About once per month
 ■ More than once per year
 ■ Less than once per month
 ■ Do not drive
 ■ Going to diving school
 ■ No Answer

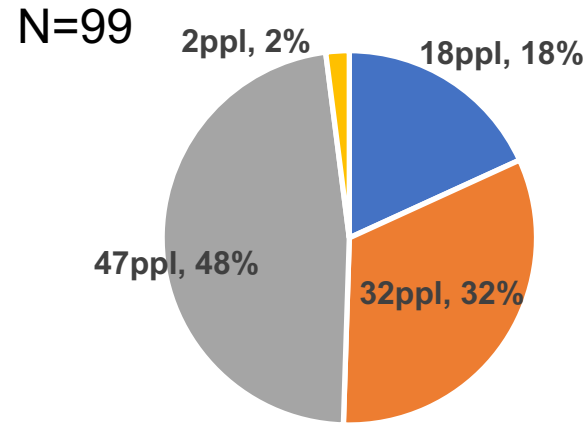
5. Have you ever been diagnosed with sleep apnea/glaucoma?

sleep apnea syndrome
picture scroll depicting
scene of driving

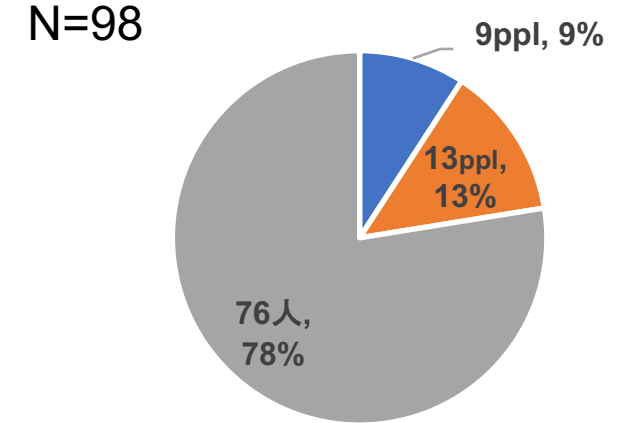
Japan



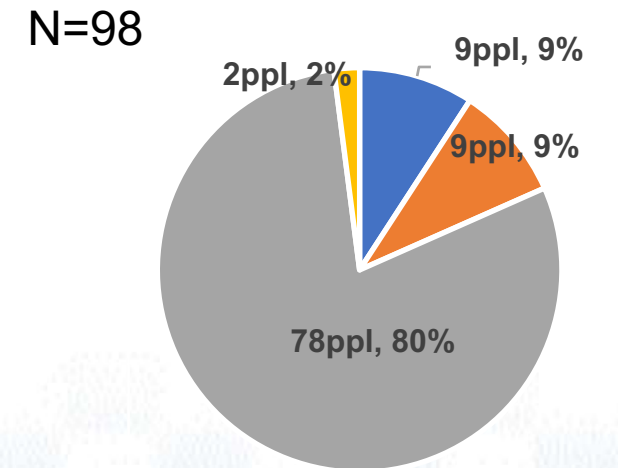
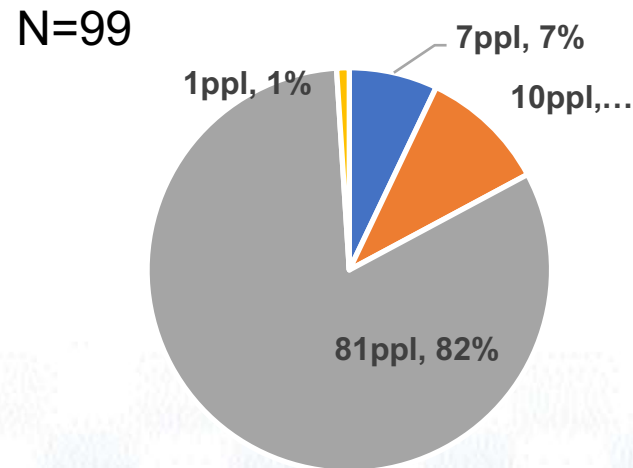
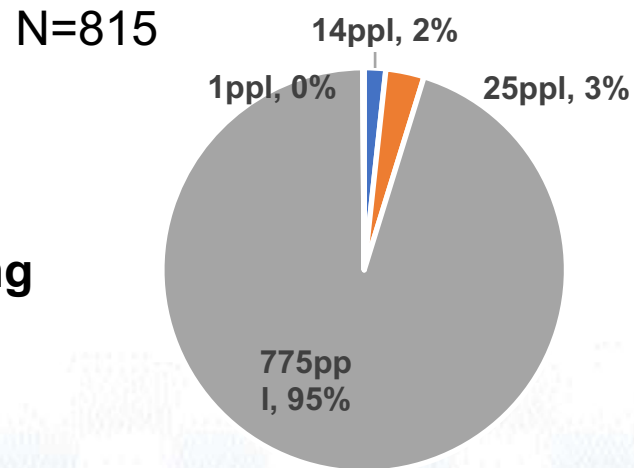
China



Thailand

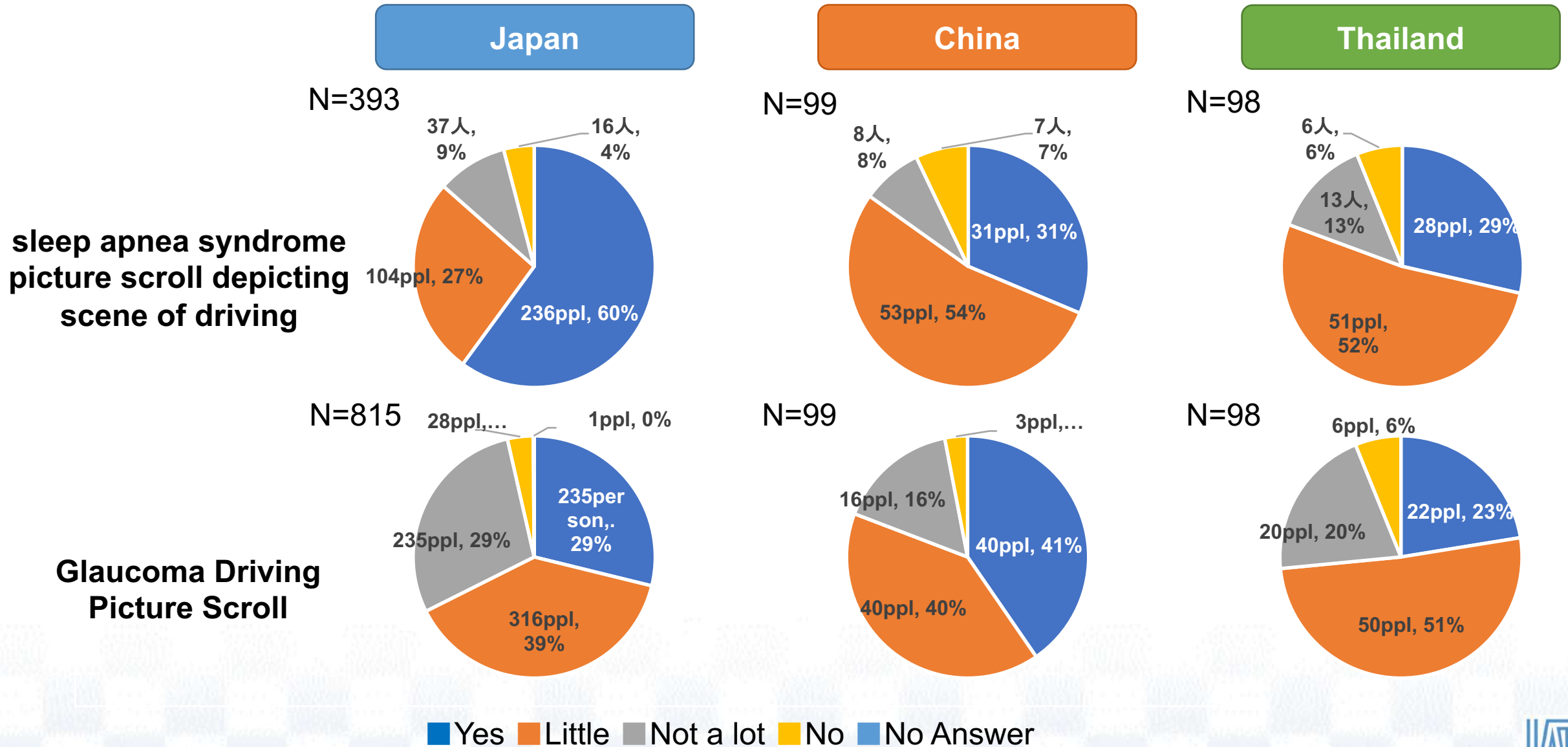


Glaucoma Driving
Picture Scroll



■ Yes ■ Suspected ■ No ■ No Answer

6. Are you aware of the disease sleep apnea/glaucoma?



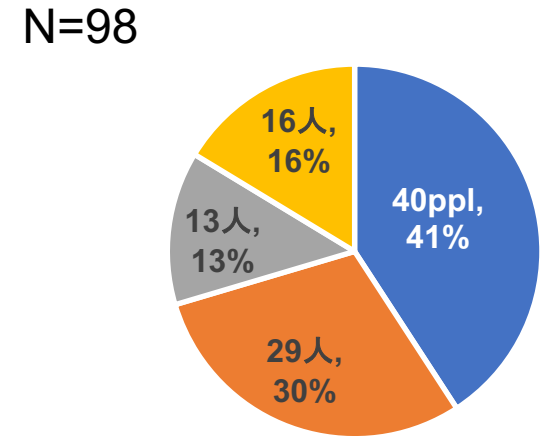
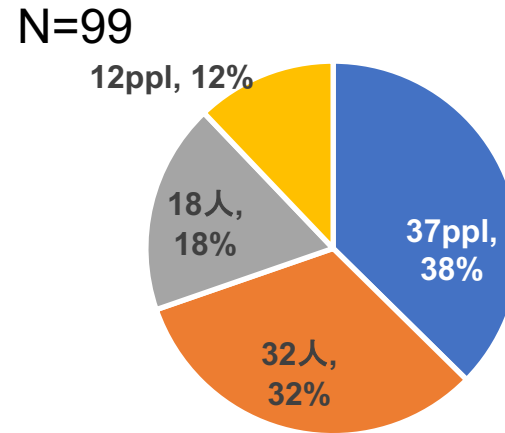
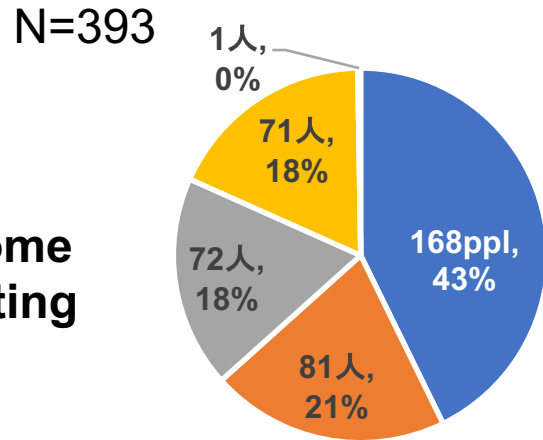
7. Before watching the video, did you know that sleep apnea/glaucoma can cause car accidents?

Japan

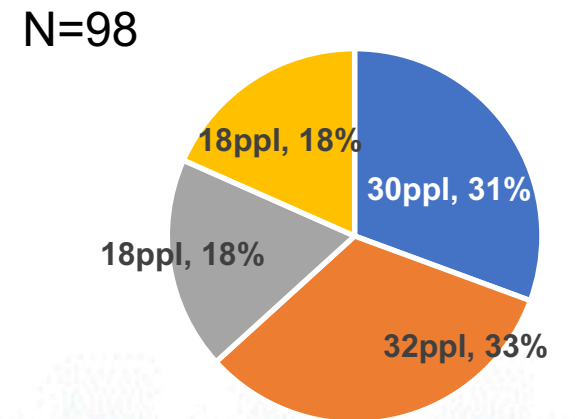
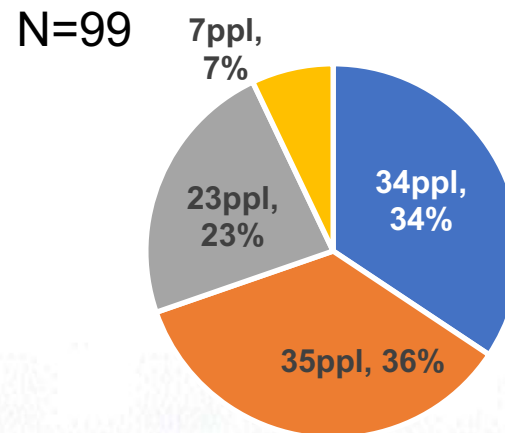
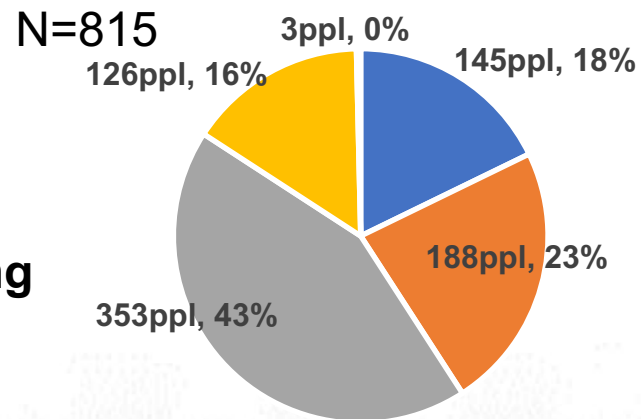
China

Thailand

sleep apnea syndrome
picture scroll depicting
scene of driving



Glaucoma Driving
Picture Scroll



■ Yes ■ Little ■ Not a lot ■ No ■ No Answer

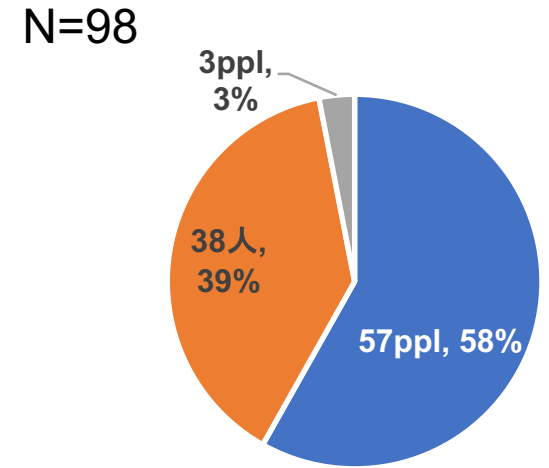
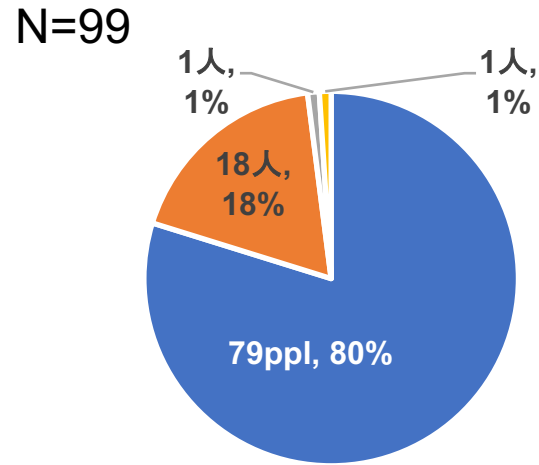
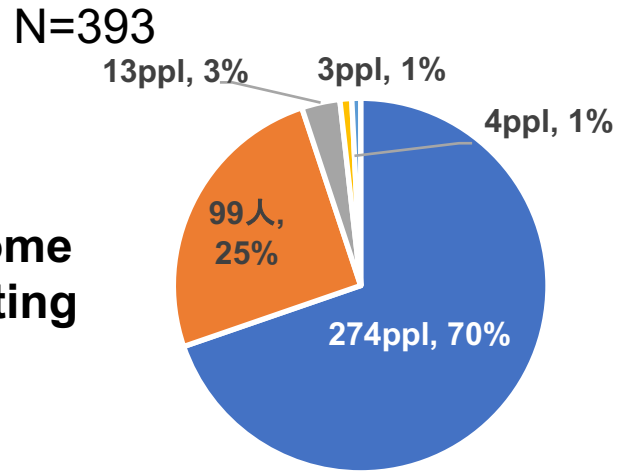
8. After watching the video, do you have a better understanding of sleep apnea/glaucoma and car accidents?

Japan

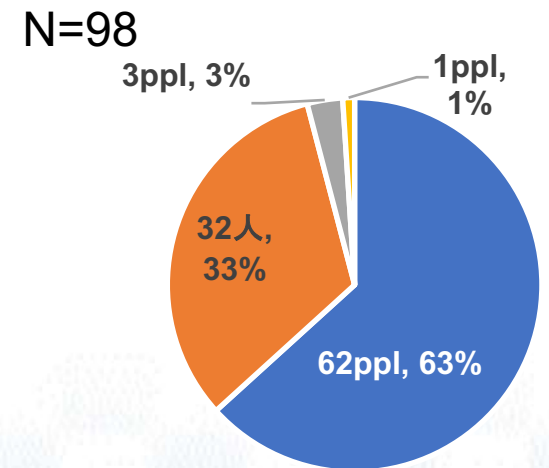
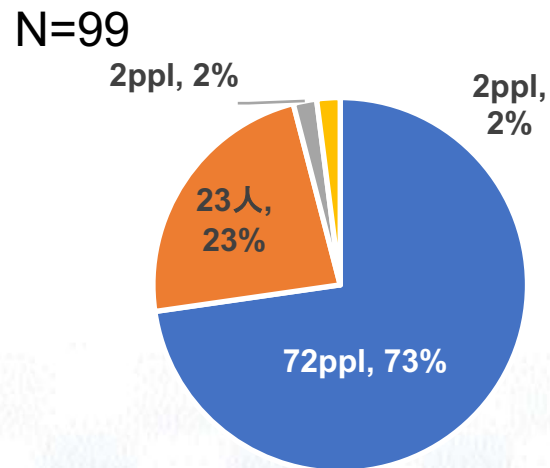
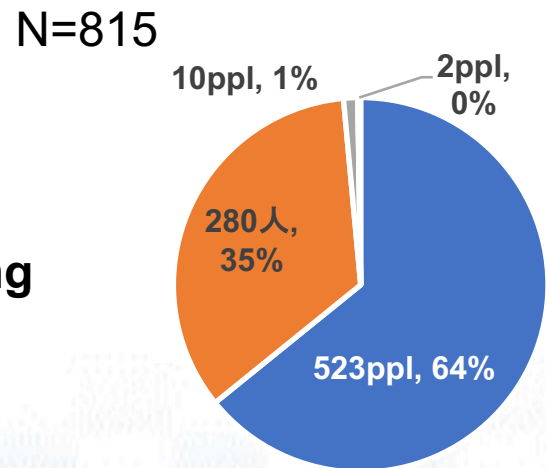
China

Thailand

**sleep apnea syndrome
picture scroll depicting
scene of driving**

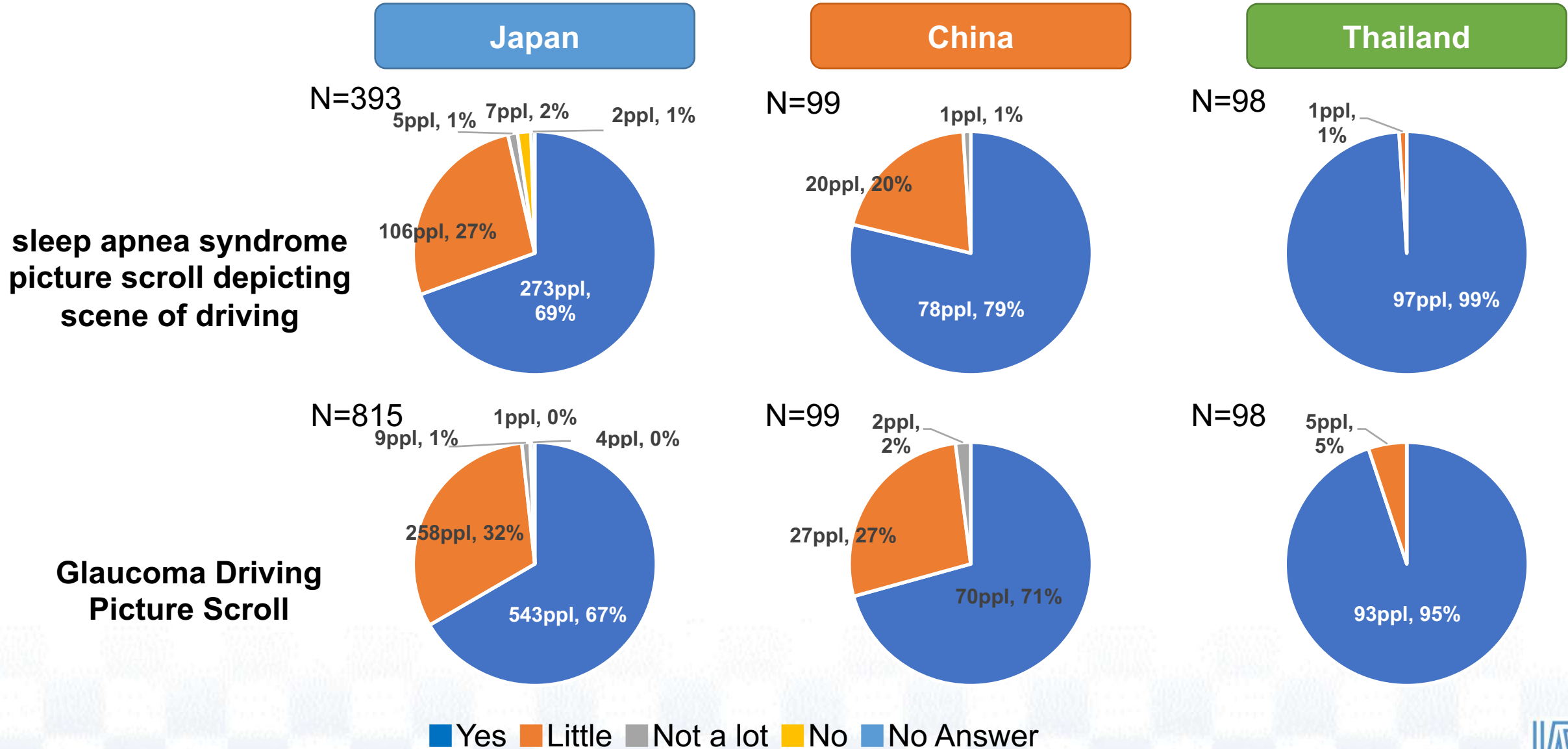


**Glaucoma Driving
Picture Scroll**

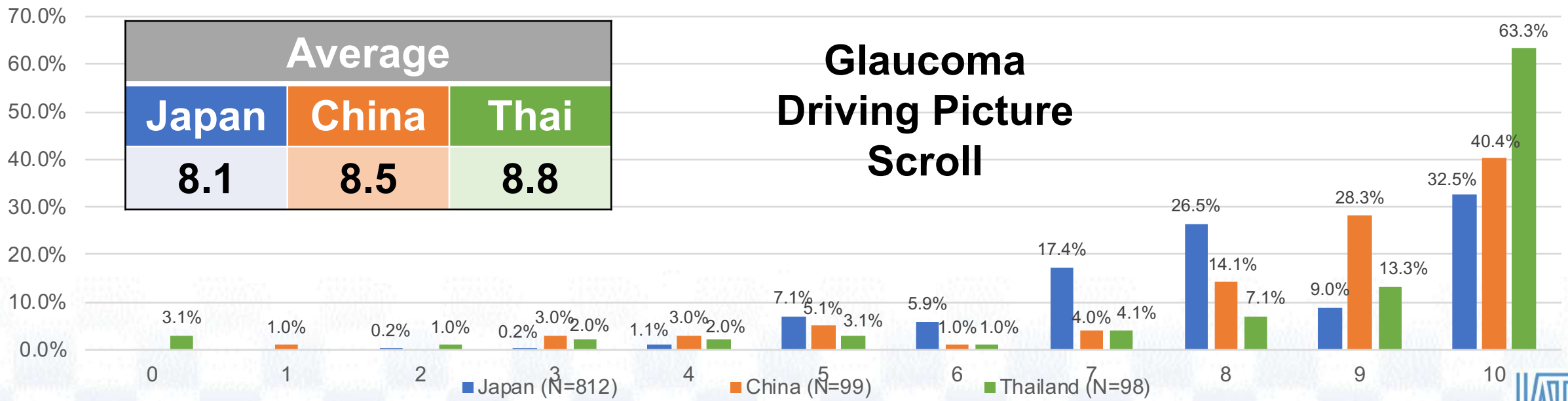
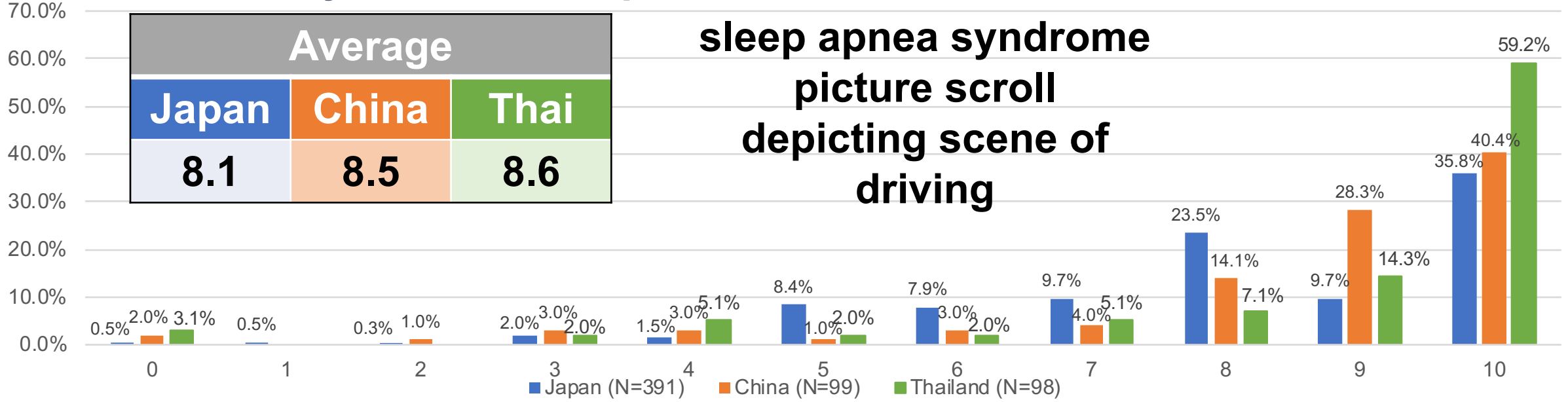


■ Yes ■ Little ■ Not a lot ■ No ■ No Answer

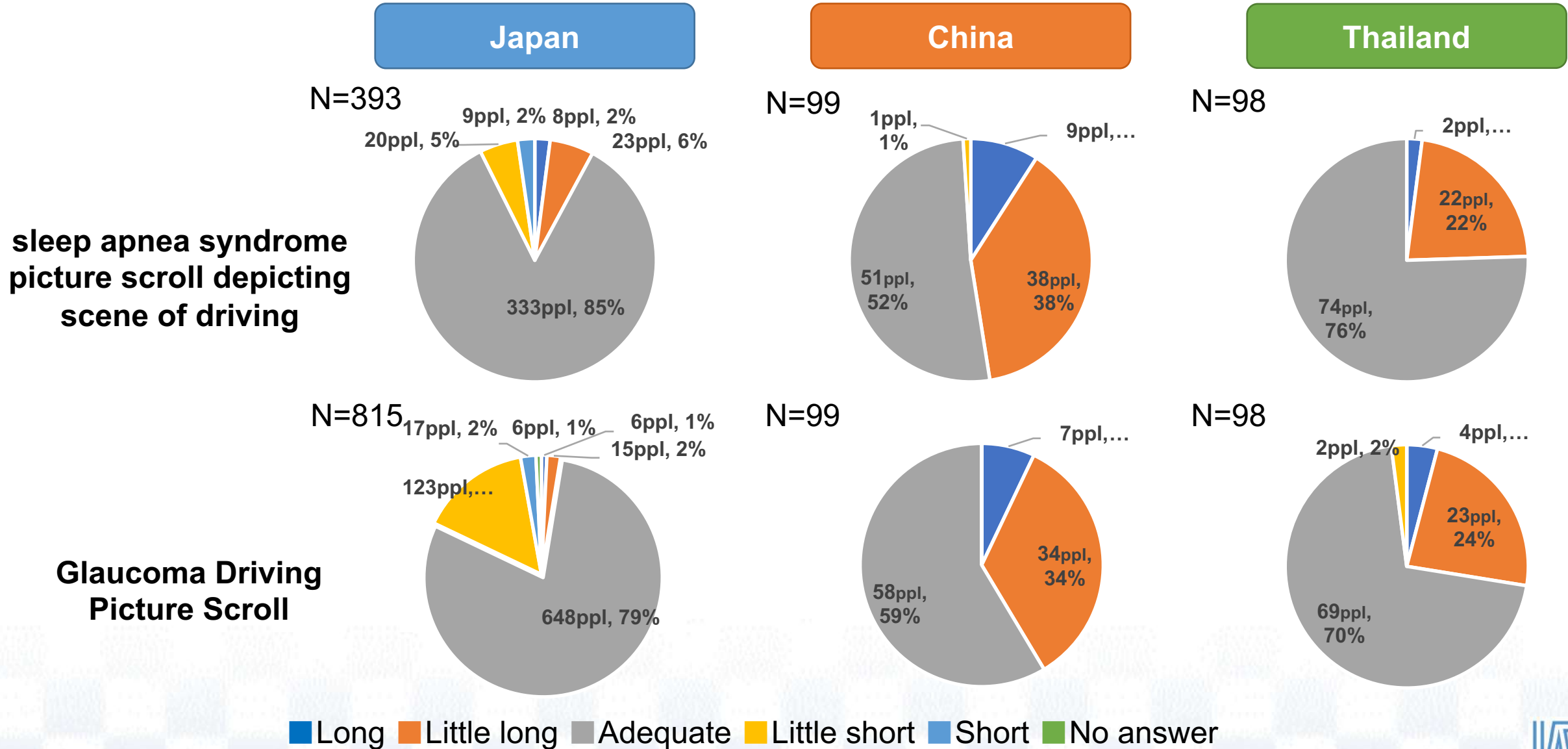
9. Was this video useful to you?



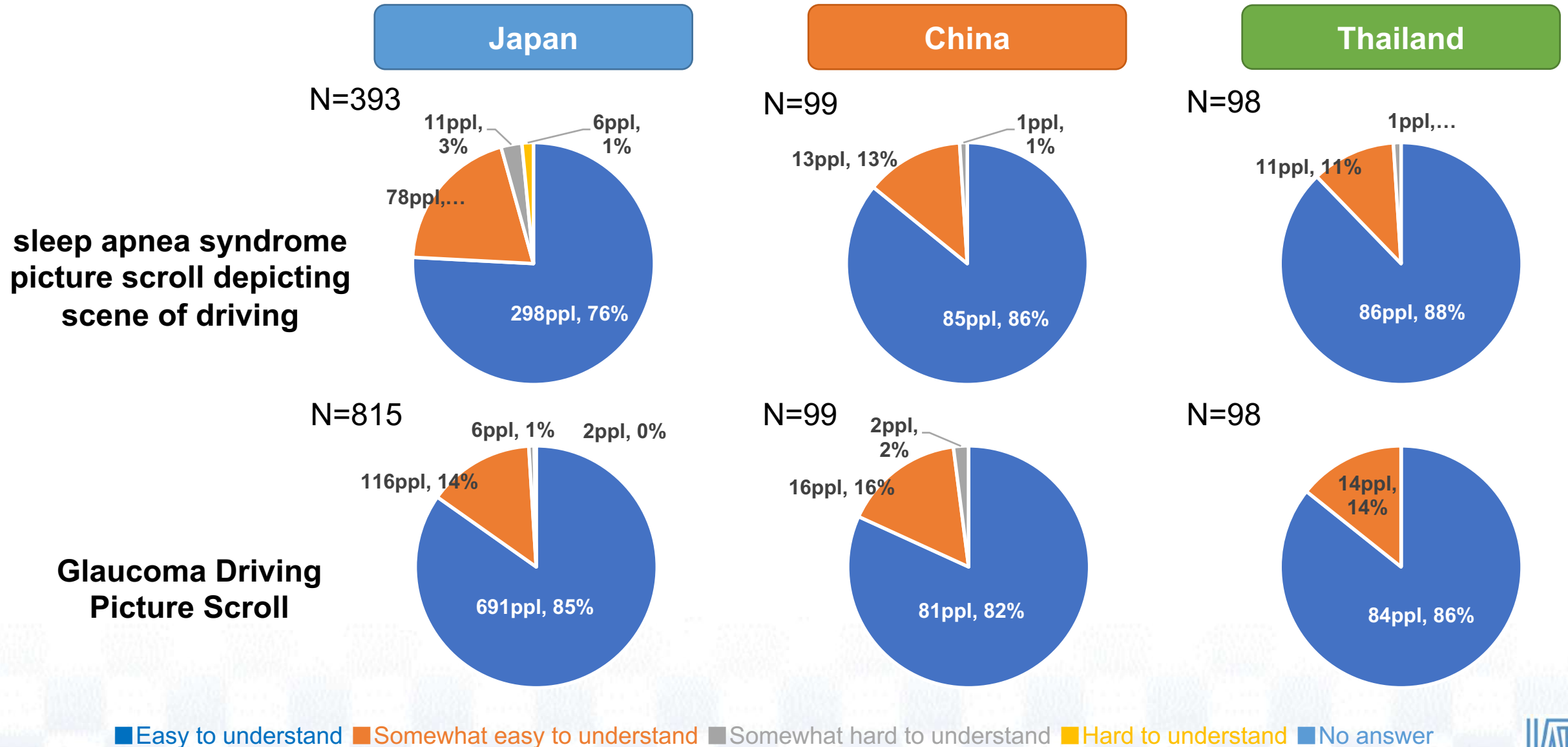
10. Please rate your overall impression of this video on a scale of 1 to 10.



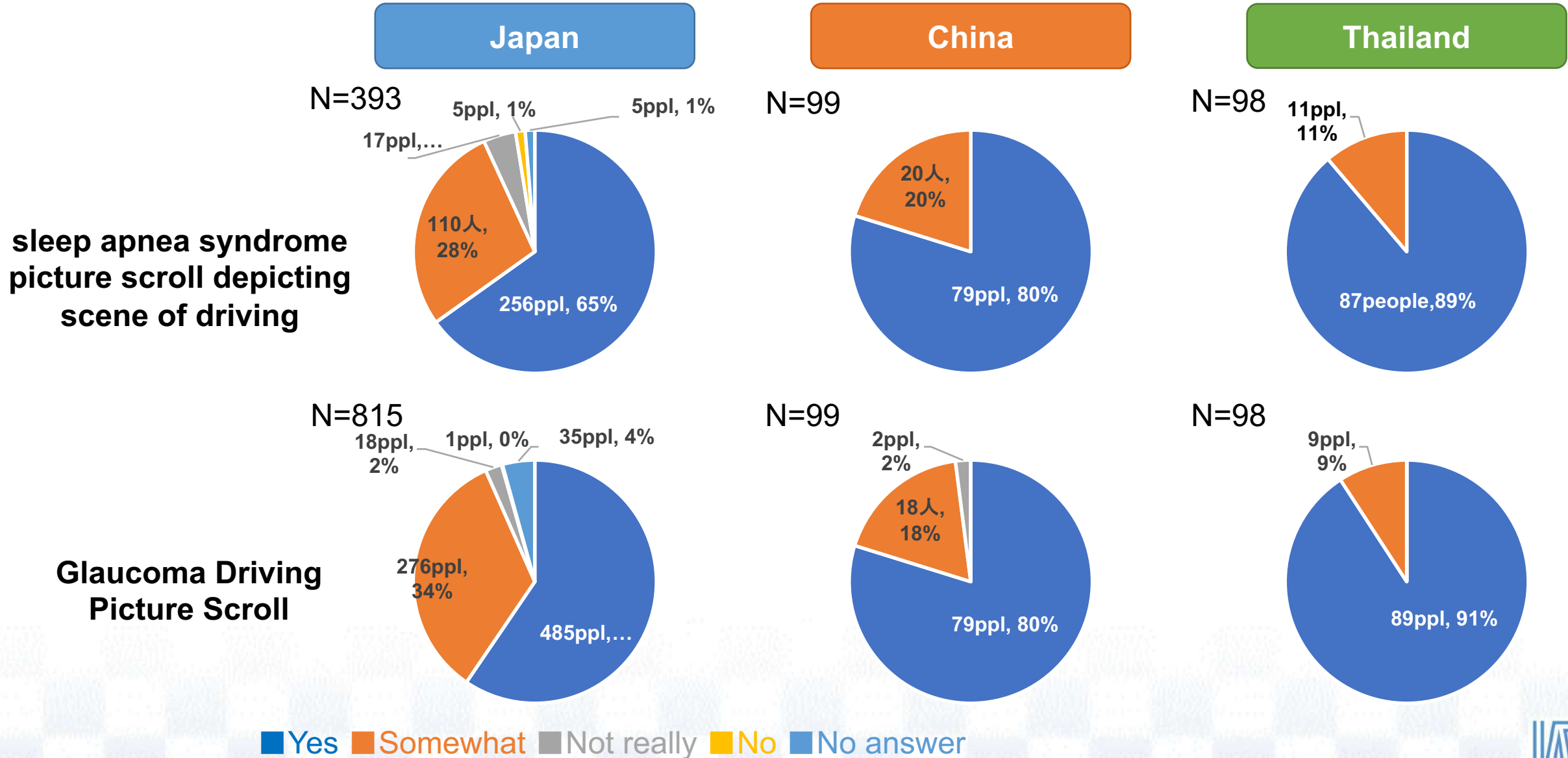
11. Was the duration (length) of the video appropriate?



12. Was the content of the video easy to understand?



15. Do you think this video is useful as an effort to prevent traffic accidents caused by illness?

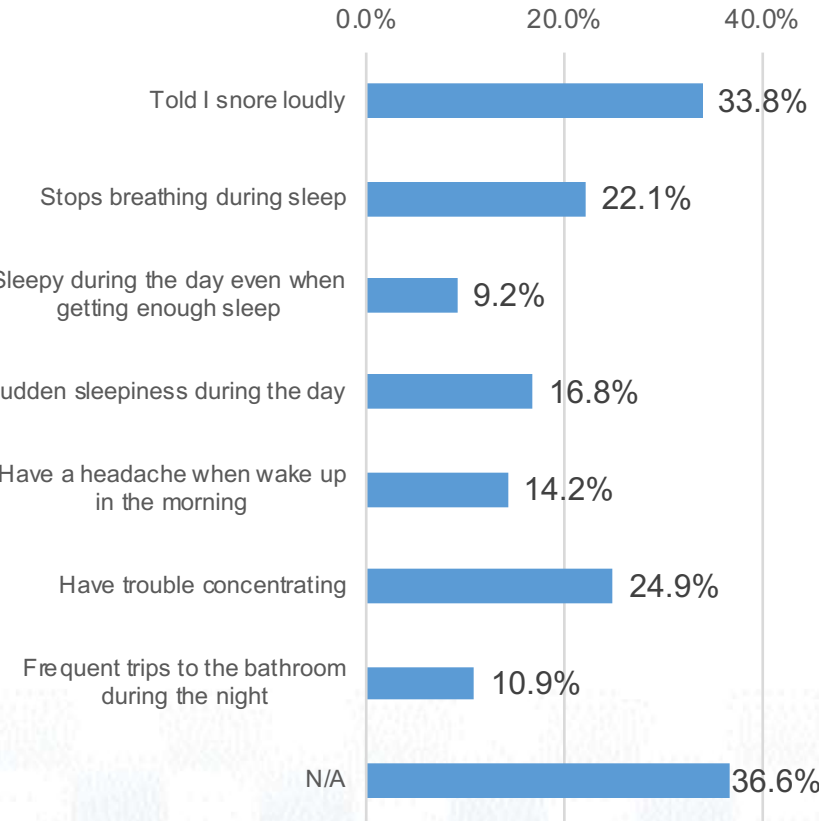


17. Please answer the following questions about the symptoms of sleep apnea presented in the video.

1) Please check for all that apply to you.

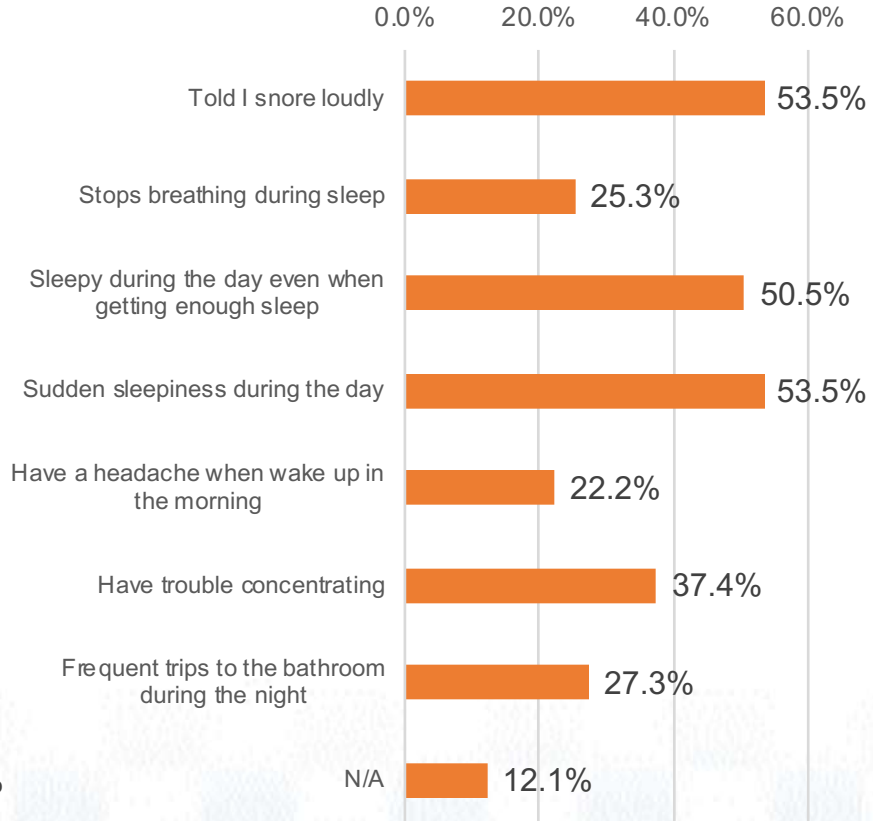
Japan

N=386



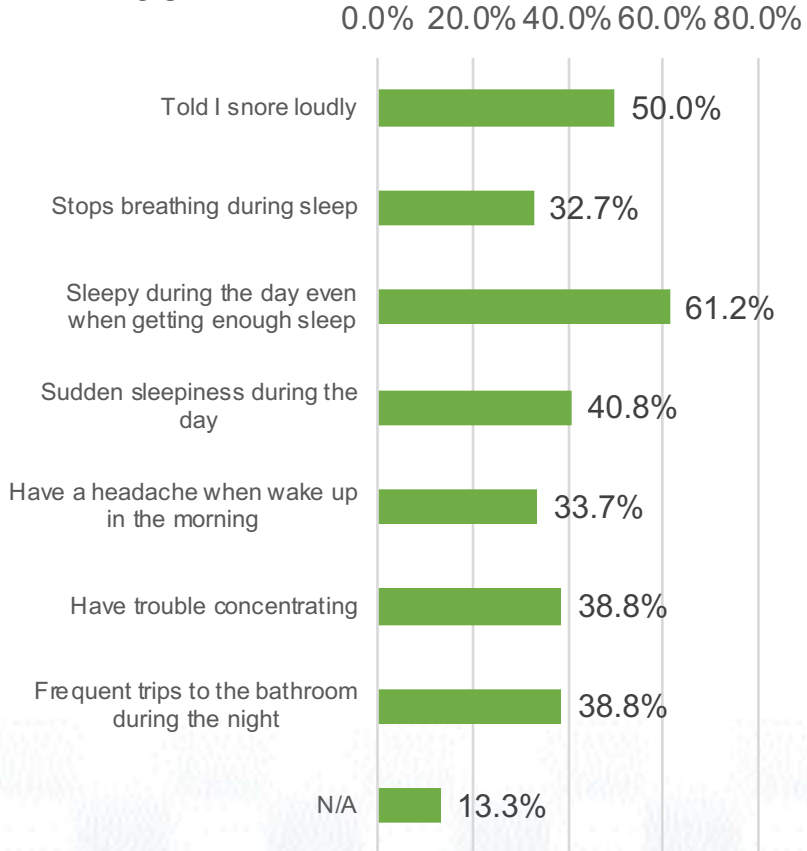
China

N=99



Thailand

N=98



17. Please answer the following questions about the driving situations often experienced by people with glaucoma shown in the video

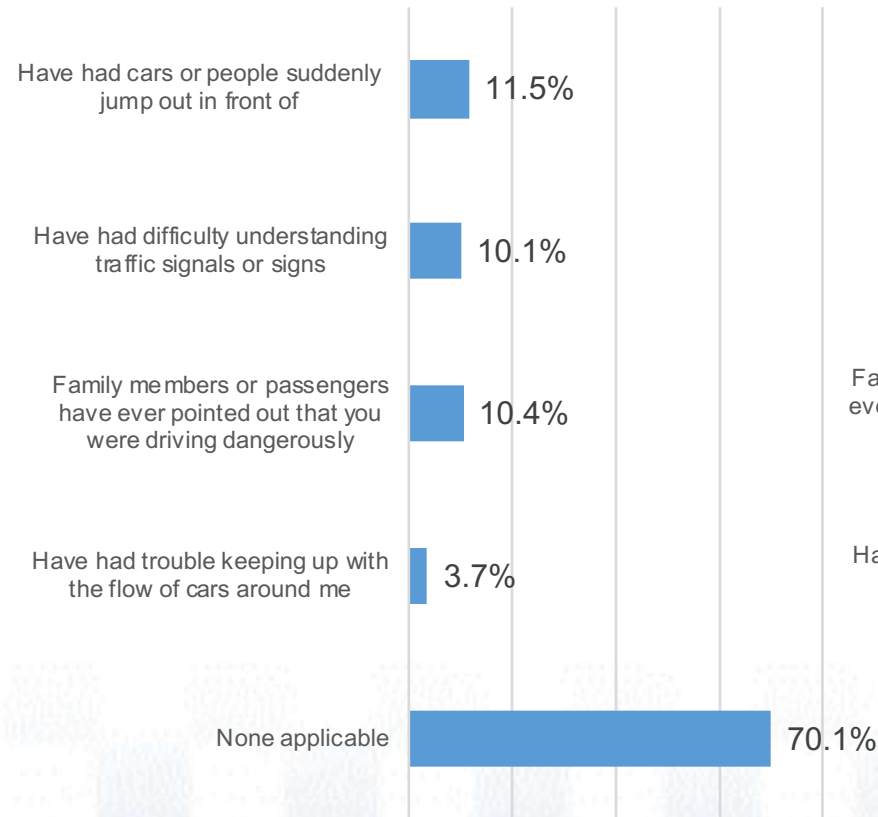
Please answer the following questions about.

1) Please check all that apply to you.

Japan

N=756

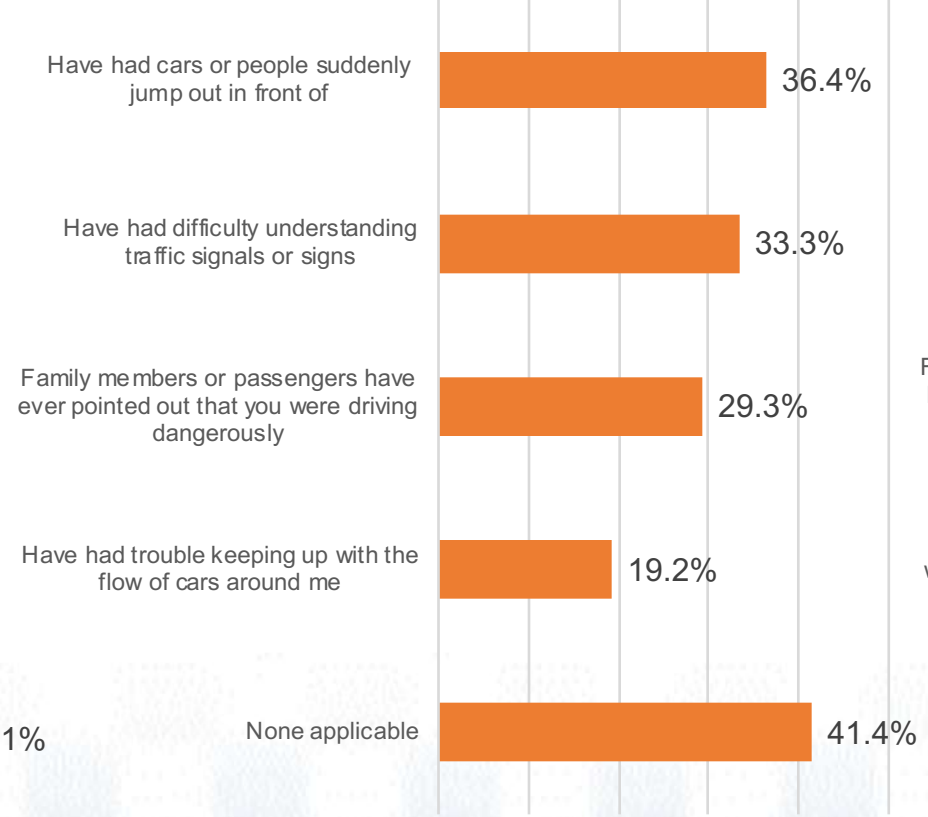
0.0% 20.0% 40.0% 60.0% 80.0%



China

N=99

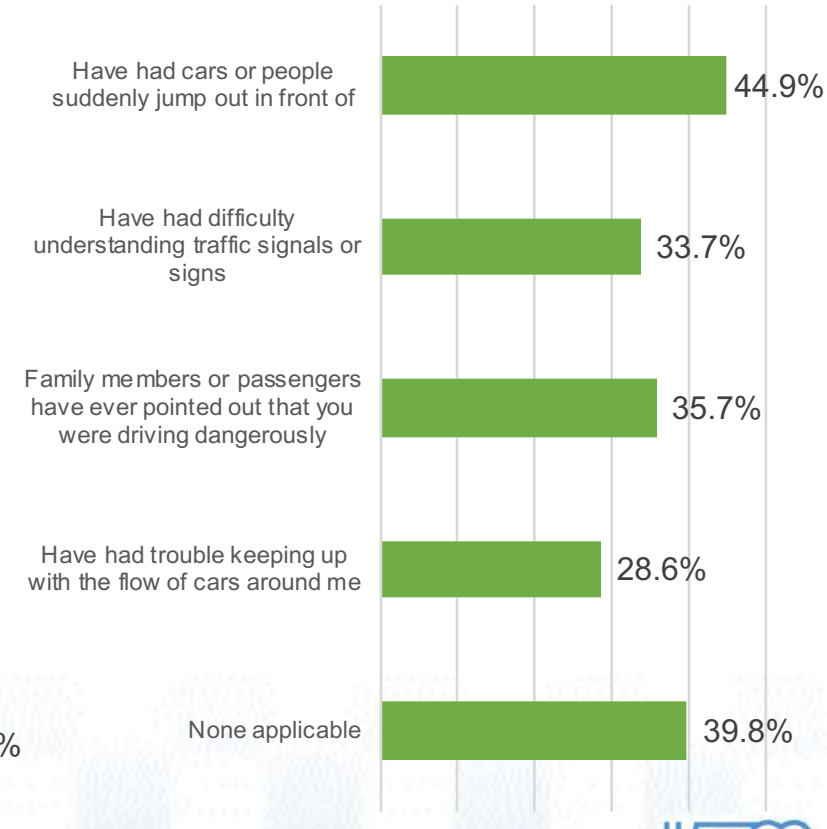
0.0% 10.0% 20.0% 30.0% 40.0% 50.0%



Thailand

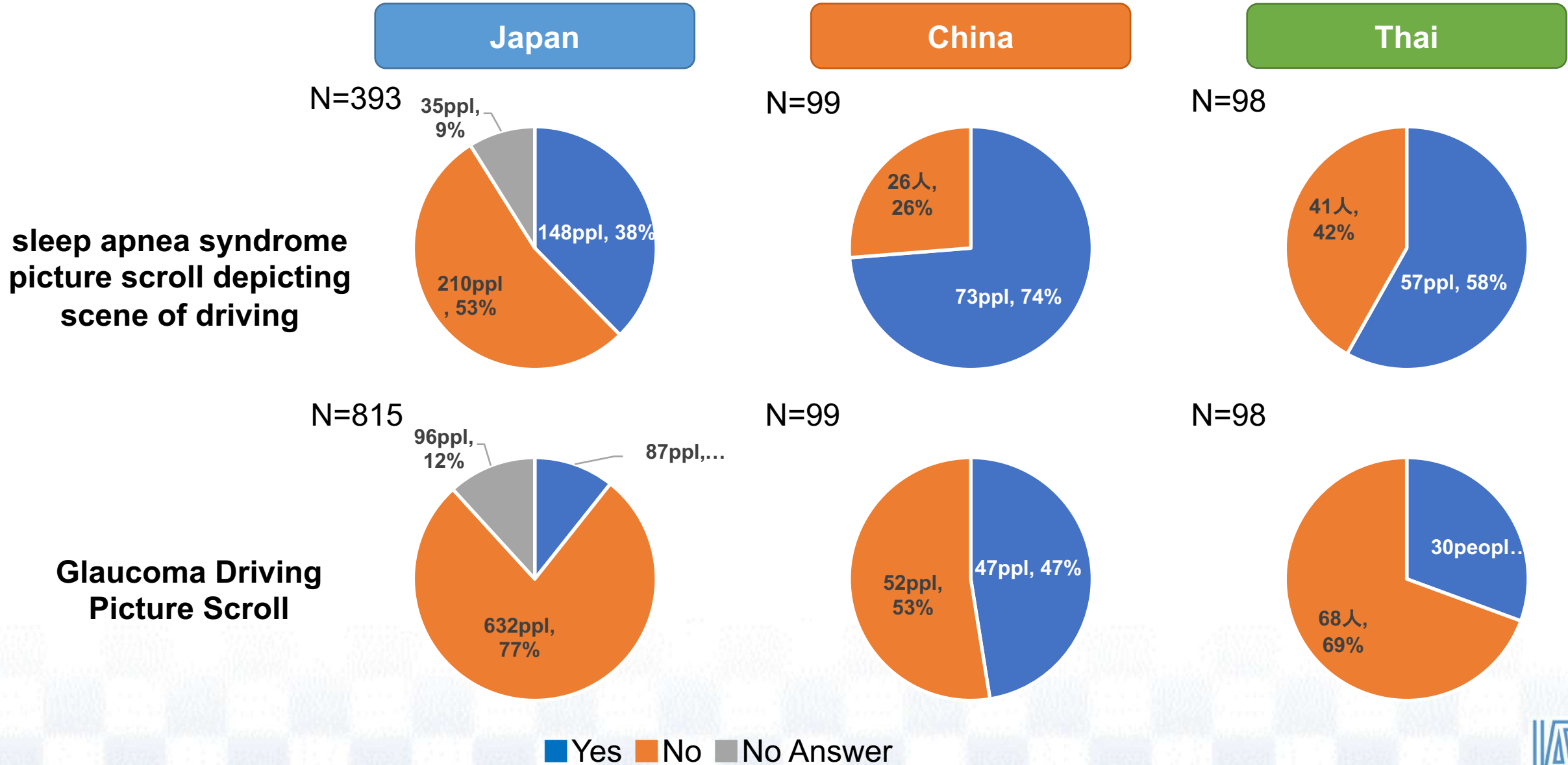
N=98

0.0% 10.0% 20.0% 30.0% 40.0% 50.0%



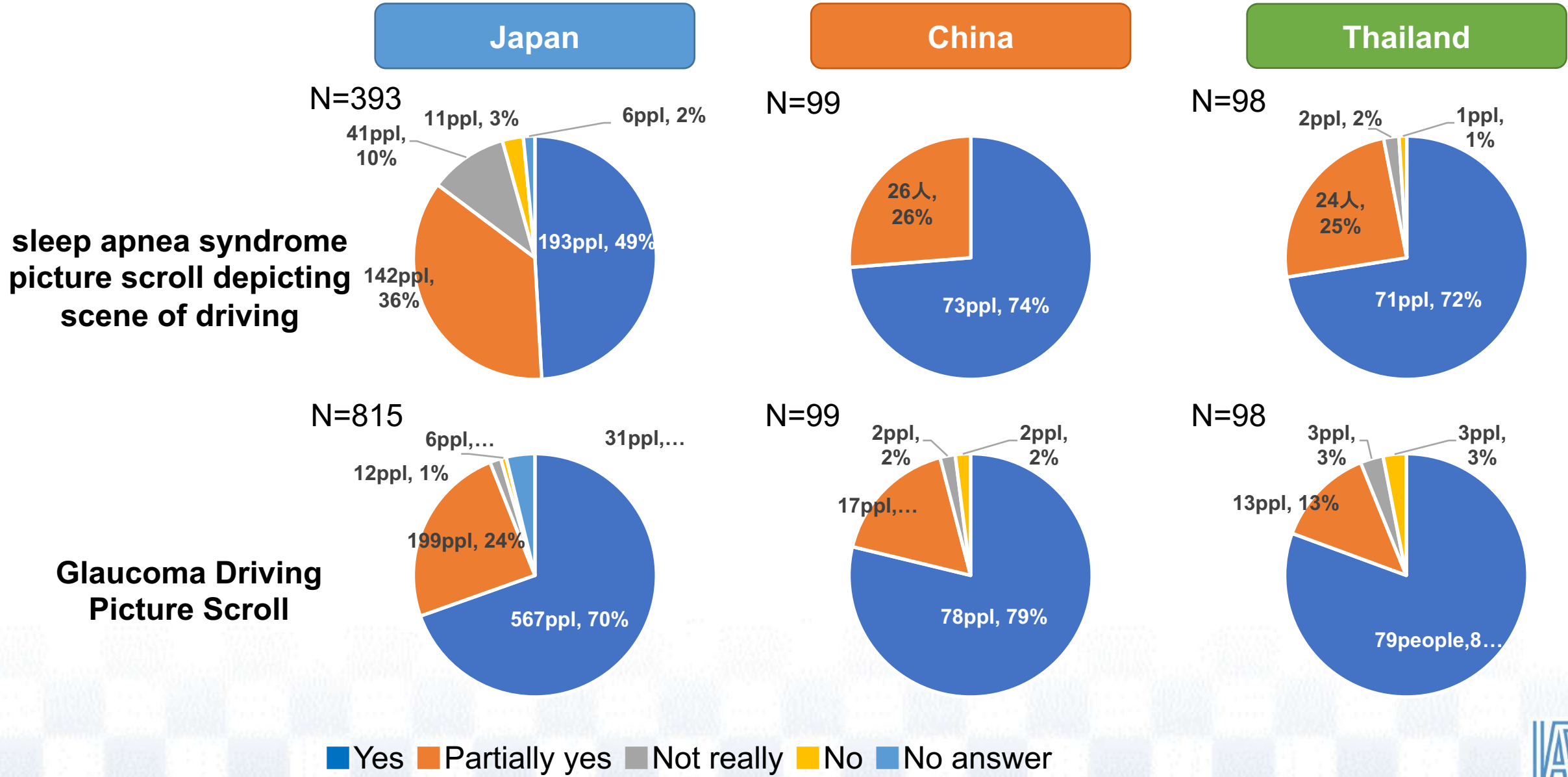
17. Please answer the following questions about driving situations often experienced by sleep apnea/glaucoma sufferers presented in the video.

2) Does anyone in your family, close people at work, etc. apply to you?

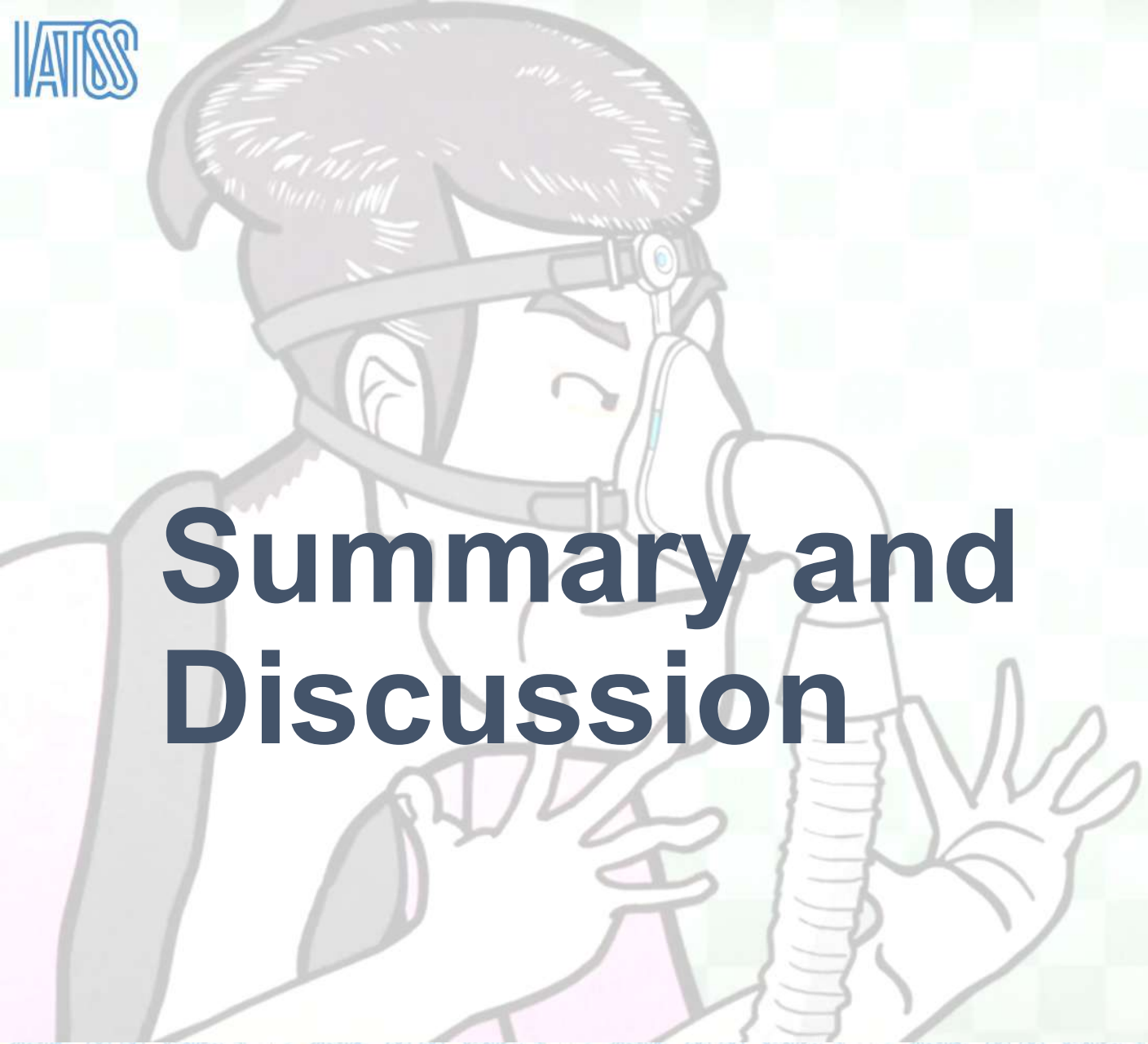


18. after watching this video, do you suspect that you or someone close to you in your family, workplace, etc. has sleep apnea?

After watching this video, if you suspect that you or someone close to you in your family or workplace has sleep apnea, would you personally seek medical attention or recommend that he/she seek medical attention?



Summary and Discussion



Prevalence of sleep apnea and glaucoma

Sleep apnea syndrome

Glaucoma

Japan

China

Thai

Japan

China

Thai

Percentage of those who have ever been diagnosed

| | Japan | China | Thai | Japan | China | Thai |
|---------------------------|--|------------|--------------|---------------------------------------|-------------|---------------------------------------|
| This study | 5% | 18% | 9% | 2% | 7% | 9%. |
| Preceding research | 14.8% | 8.8 | 14.7% | 4.0% | 3.1% | 3.8% |
| | Prevalence of obstructive sleep apnea (AHI >15 breaths/hr) in 30-69 year olds*¹ | | | Over 40 years old*² | | Over 50 years old*³ |

*1 Benjafield et al. Lancet Respir Med. 2019; *2 Quigley & Broman. Br J Ophthalmol. 2006; *3 Bourne et al. Br J Ophthalmol. 2003.

- Rates of diagnosed sleep apnea and glaucoma are higher in China and Thailand than in Japan (deviating from previous studies).

Awareness of sleep apnea and glaucoma

sleep apnea syndrome

glaucoma

Japan

China

Thai

Japan

China

Thai

Percentage of those who know of the disease.

60%

31%

29%

29%

41%

23%

Percentage of those who know that illness can cause traffic accidents

43%

38%

41%

18%

34%

31%

- In contrast to the expectation that sleep apnea and glaucoma are not well recognized in China and Thailand (opinion exchange with experts [2020] and hearing survey in Thailand [2022]), awareness was high.

Symptoms and experiences related to sleep apnea and glaucoma

sleep apnea syndrome

glaucoma

Japan

China

Thai

Japan

China

Thai

Percentage of respondents who have one or more of the following symptoms or situations that they often experience while driving

63%

88%

87%

30%

59%

60%

Percentage of respondents who reported that someone close to them applies to their symptoms and situations they often experience while driving.

38%

74%

58%

11%

47%

31%

- The percentage of people with symptoms or experiences of suspected sleep apnea or glaucoma was higher in Thailand and China than in Japan, not only among those who viewed the videos but also among those who were around them.
- Potential patients with sleep apnea and glaucoma may exist more than Japan.

Evaluation and Effectiveness of Awareness Videos

| | sleep apnea syndrome | | | glaucoma | | |
|---|----------------------|-------|------|----------|-------|------|
| | Japan | China | Thai | Japan | China | Thai |
| My understanding of the disease and traffic accidents has "deepened" or "somewhat deepened" | 95% | 98% | 97% | 99% | 96% | 96% |
| The video was "useful" or "somewhat useful". | 96% | 99% | 100% | 99% | 98% | 100% |
| The video was "easy to understand" and "somewhat easy to understand". | 96% | 99% | 99% | 99% | 98% | 100% |
| Video length was "long" or "somewhat long" | 8% | 47% | 24% | 3% | 41% | 28% |
| "Agree" and "somewhat agree" that it is useful as an initiative to prevent health-related accidents. | 83% | 100% | 100% | 94% | 98% | 100% |

Notes on this survey

- Japan, China, and Thailand have different driver's license systems and health care systems. In addition, the method of administering the questionnaire is different in each country, and the gender and age structure of the target population are not uniform, so a simple comparison of results is not possible.
- The sample representativeness should be kept in mind, as there are deviations from previous studies in terms of prevalence and disease awareness among subjects in Thailand and China.

Conclusion

- Created awareness videos (in Japanese, Chinese, and Thai) on sleep apnea and glaucoma, and conducted a questionnaire survey after viewing the videos.
- Although it is necessary to keep in mind the representativeness of the sample, it was thought that there may be more potential sleep apnea and glaucoma patients in China and Thailand than in Japan.
- The awareness-raising video was highly rated in China and Thailand and is considered to be a useful tool for preventing health-related accidents.

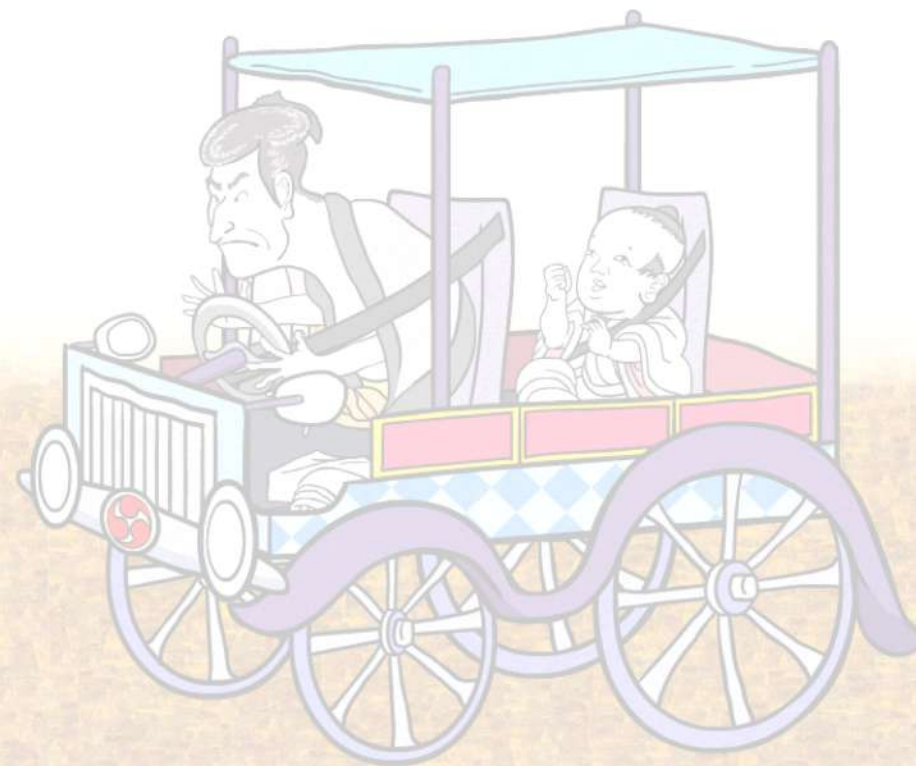
IATSS

公益財団法人 国際交通安全学会

International Association of Traffic and Safety Sciences

緑内障

國際交通
安全學會



Thank you for your attention.

睡眠時
無呼吸
症候群