The 40th Symposium on Japan Transport Research Institute

November 24, 2016

Tokyo, Japan

Traffic Risk Perception and Loyalty of ~~Paratransit~~ LAMAT users in Phnom Penh

(パラトランジット利用者の安全認識と愛着：プノンペンにおける事例分析)

LAMAT: Locally Adapted, Modified and Advanced Transport

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Outline

1- Introduction

はじめに

To Japanese by 五十嵐 達哉

Angkot & Becak, Indonesia
Photo: Tetsuo Yai

Safa Tempo, Nepal
Yai

Thailand
Tuktuk
Silorlek
Songteaw

Cyclo, Cambodia

Jeepney & Tricycle, Philippines

Jambo, Laos
Yai

Motorcycle taxi

These modes are known as **Paratransit**, but we call them as **LAMAT**.
(**L**ocally **A**dapted, **M**odified and **A**dvanced **T**ransport)

(Phun and Yai, 2016)

➤ **LAMAT is proposed** and **used instead of** paratransit because:
  – Different concepts of paratransit in developed vs developing countries
  – Various definitions and terms of paratransit (e.g. informal public transport)
  – To cover all paratransit services/operations in Asian developing countries
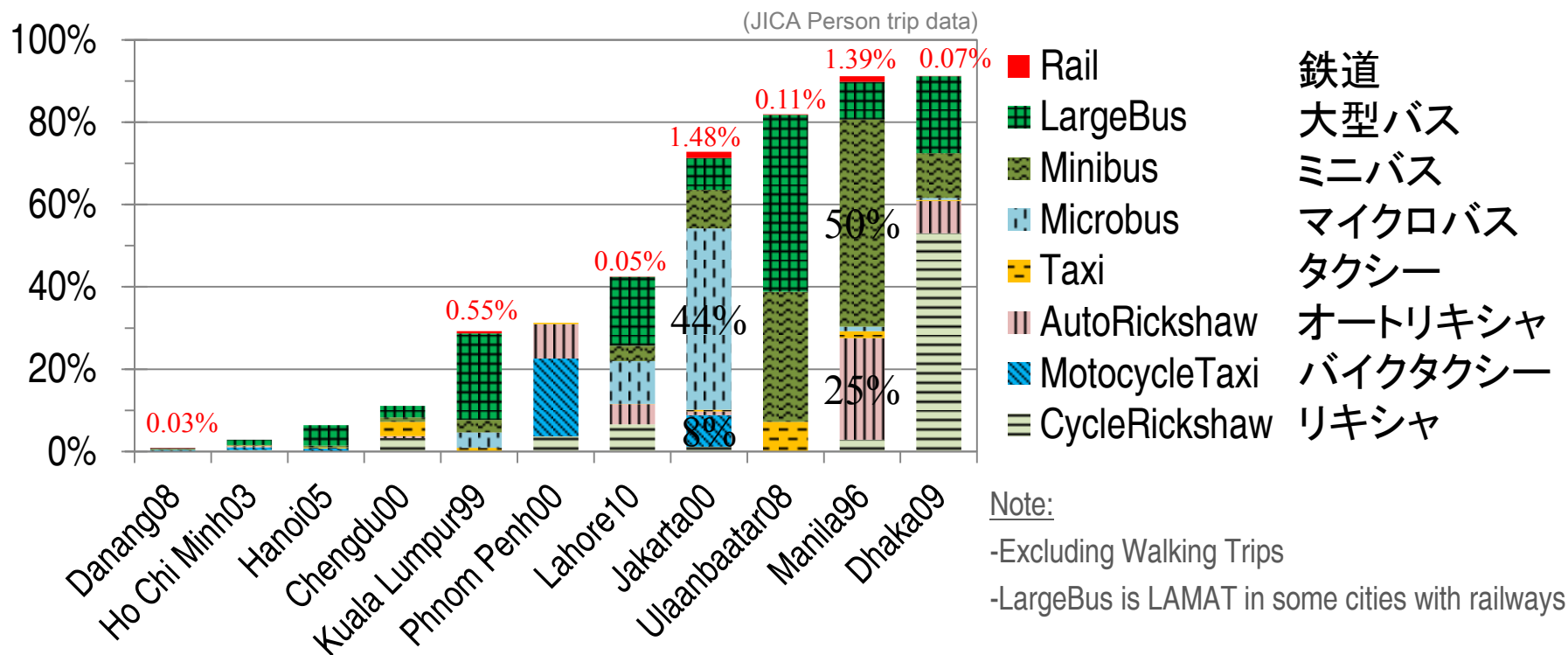
Share of LAMAT Users　　LAMATの利用状況

(JICA Person trip data)

	Rail	鉄道
	LargeBus	大型バス
	Minibus	ミニバス
	Microbus	マイクロバス
	Taxi	タクシー
	AutoRickshaw	オートリキシャ
	MotocycleTaxi	バイクタクシー
	CycleRickshaw	リキシャ

Note:
-Excluding Walking Trips
-LargeBus is LAMAT in some cities with railways

Fig. Share of public transport users in Asian developing cities

- Share of railways is small (0.03-1.48%), while LAMAT share is large.

- E.g., Jakarta and Manila have railways, but why LAMAT remain popular?

➤ LAMAT modes are still popular among Asian developing cities. Why?

Benefits of LAMAT　　LAMATのメリット

- Inadequate mass transit system ➔ Citizens depend on LAMAT as main public transport modes.

Thailand

Cambodia

- LAMAT plays a significant role in urban mobility because **it provides**:
  - Personalized and flexible transport services
  - Transport needs to low-incomes, students, elderly, and disabled
  - Service coverage between private vehicles and mass transit
  - Job opportunities to the poor or low-skilled people, etc.

- LAMAT requires low energy & operational costs, no public subsidy, etc.

> ➢ The flexibility, availability, and affordability of LAMAT services are the key survival in Asian developing cities.

Drawbacks of LAMAT　　LAMATのデメリット

- With lack of control & regulation, operations of LAMAT often cause:
  - Congestion (e.g., letting in/out passengers)
  - Accidents (e.g., reckless driving, violations)
  - Air/noise pollution (e.g., old vehicle, overloading)

Tricycle in Cebu, up to 8 persons

- LAMAT is also considered as unreliable with minimal comfort, inhuman working condition, and criminal-style structure.

- ➢ With these drawbacks, some LAMAT modes were banned and some gradually disappeared! (e.g., diesel 3-wheelers, non-motorized LAMAT)

Cycle Rickshaw

➢ What users concern most is the LAMAT-relevant traffic risk! (Cervero, 2000)

Personal experience

- Airport → SkyTrain → Motorcycle taxi
- High risk of traffic accidents because:
  - -Frequent lane-changing
  - -Accelerate/Decelerate
  - -Infiltrating narrow space
  - -Driving errors

> ➢ Motorcycle taxis are probably the <u>most dangerous</u> LAMAT since they ply on city streets without a "protective shell".
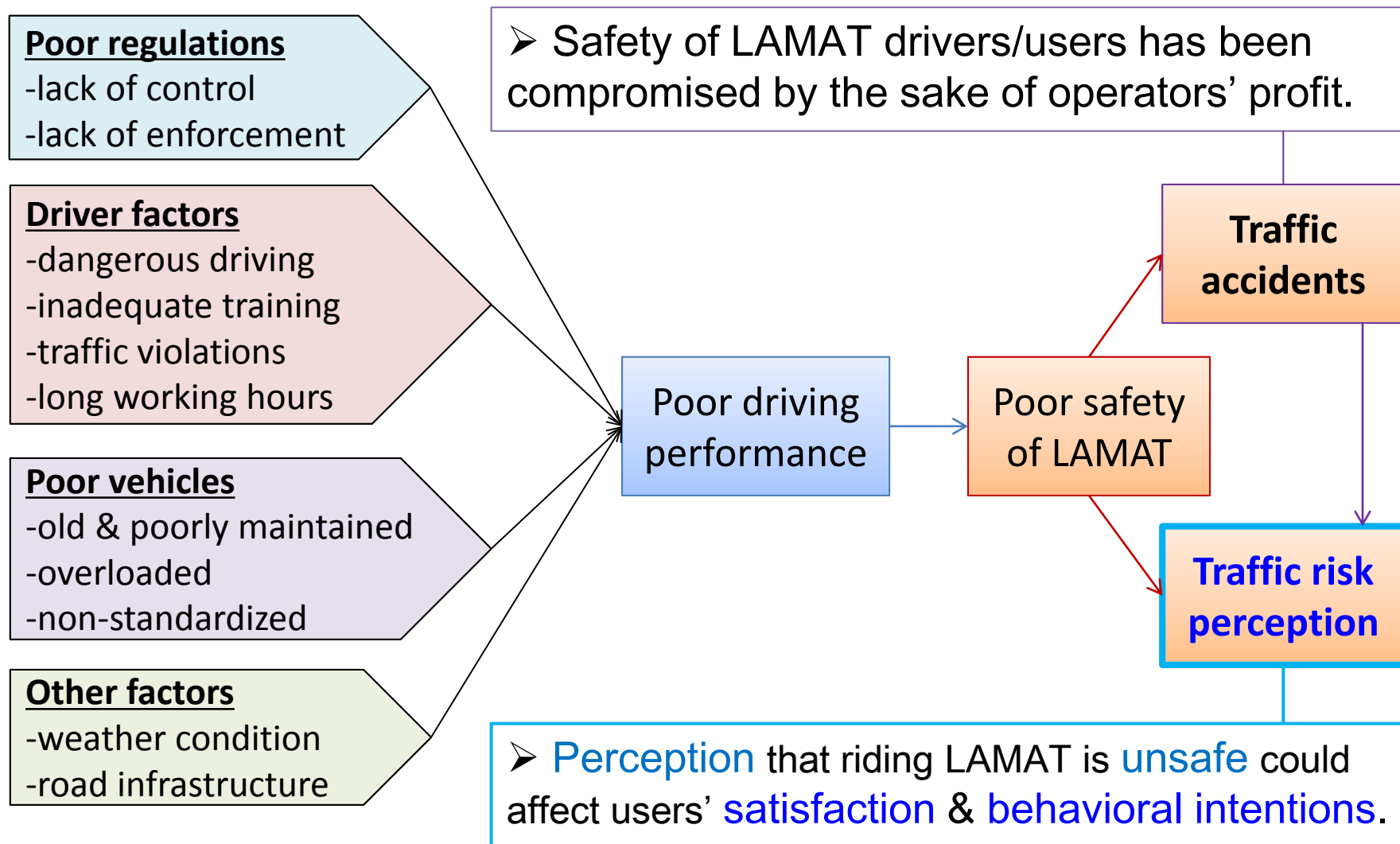

Congestion in Bangkok, Nov. 2015

In a hurry, so I used bike taxi

I accepted the risk of traffic accidents

• Most LAMAT operations are unregulated and profit-based motive.

Poor regulations
-lack of control
-lack of enforcement

Driver factors
-dangerous driving
-inadequate training
-traffic violations
-long working hours

Poor vehicles
-old & poorly maintained
-overloaded
-non-standardized

Other factors
-weather condition
-road infrastructure

➤ Safety of LAMAT drivers/users has been compromised by the sake of operators' profit.

Poor driving performance → Poor safety of LAMAT

Traffic accidents

Traffic risk perception

➤ Perception that riding LAMAT is unsafe could affect users' satisfaction & behavioral intentions.

Behavioral intentions

- *Theory of Planned Behavior*: behavioral intentions are important indicators that determine the future behaviors of customers. (TRB, 1999)

- Researchers have regarded behavioral intentions as measures to represent costumer/user loyalty.

➢ **Two behavioral intentions** for user loyalty: (Lai and Chen, 2011)

    -to continue using LAMAT service

    -to recommend LAMAT service to others

Satisfaction

- Satisfaction is users' overall impression of LAMAT service, including service quality, driver behaviors, and vehicles.

➢ A higher usage level of LAMAT service is expected for satisfied users than dissatisfied users.

交通リスク認知に関する文献

- Traffic risk perception refers to subjective assessment of the risk associated with a traffic situation. (Deery, 1999)

- This concept is important for traffic safety studies, to identify potential risk factors used to improve risky driving behaviors. (Nordfærn & Rundmo, 2009)

- Many studies for general road users, but only **a few** for public transport operators/passengers in Asian developing countries. E.g.,

  – Joewono and Kubota (2006) formulated the safety improvement agenda based on safety perception of Angkot users in Indonesia.

  – Tangphaisankun et al. (2009) explored the effect of user satisfaction with safety/security of motorcycle taxi and Songtaew on the use of these modes as feeder to mass transit system and its ridership in Thailand.

> There is no study examining the effects of traffic risk perception on satisfaction and loyalty of LAMAT users.

Outline

Motivation 動機

Problems

Concerns

-Drawbacks of LAMAT
-Traffic risk perception
-Urbanization/Economic growth
-Impact of future mass transit

The future of LAMAT is questionable!

➤ Future of LAMAT is unclear, resulting **a need** to study on its survival based on users' **perception** and **degree of acceptance.**

➤ Traffic risk perception could be an <u>important factor</u> influencing on the future use of LAMAT.

Research Questions

(1) Does a LAMAT operation influence on user's traffic risk perception?

(2) Does this perception affect user satisfaction and loyalty to a LAMAT?

(3) What are possible strategies to improve users' traffic risk perception?

Objective 目的

Research objective

> **This study explores the effects of traffic risk perception on satisfaction and loyalty of LAMAT users.**
>
> 本研究では、LAMAT利用者の交通リスク認知がLAMATへの愛着や利用満足度に与える影響を明らかにする。

Keywords

Asian developing cities, LAMAT/Paratransit, Loyalty,

Traffic risk perception, Satisfaction

Outline

Working Hypotheses　　作業仮説

- There are three hypotheses:

H1: Satisfaction has positive effect on user loyalty.

> Users who satisfy with LAMAT service are more likely to repeat patronage and to recommend the service to other people.

H2: Traffic risk perception has negative effect on satisfaction.

> Users have lower satisfaction level when they perceive higher risk of traffic accidents while riding LAMAT.

H3: Traffic risk perception has negative effect on user loyalty.

> Users who perceive higher risk of traffic accidents are less likely to continue using LAMAT service.

Note: These working hypotheses are based on literature review.

Structural Equation Model (SEM)　共分散構造分析

- Structural Equation Model (SEM) is a multivariate regression model.

- SEM examines theoretical models by testing hypotheses, in order to better understand causal relationships among interested variables.
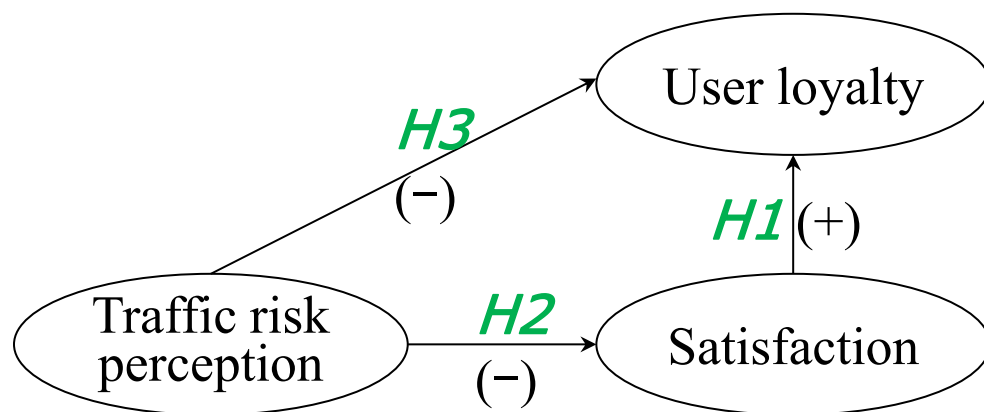

Fig. The conceptual SEM for LAMAT users

- ➢ The three hypotheses are tested under this SEM.

- Satisfaction is regarded as a mediating variable. (Kenny, 2016)

➢ There are 3 latent variables (Traffic risk perception, Satisfaction, and User loyalty), that require indicators to measure them.

交通リスク認知に関する調査

- I consider 4 risk items (indicators) to measure traffic risk perception.

Risk items: Examples of questionnaire items:

| Risk perception | | Risk1 | I feel high risk of traffic accidents when riding LAMAT. |

| Risk communication | | Risk2 | I often warn LAMAT drivers to drive more carefully. |

| Direct/Indirect experiences | | Risk3 | LAMAT operations often cause road traffic accidents. |

| Overall safety perception | | Risk4 | Overall LAMAT safety from traffic accidents. (contrary of risk perception) |
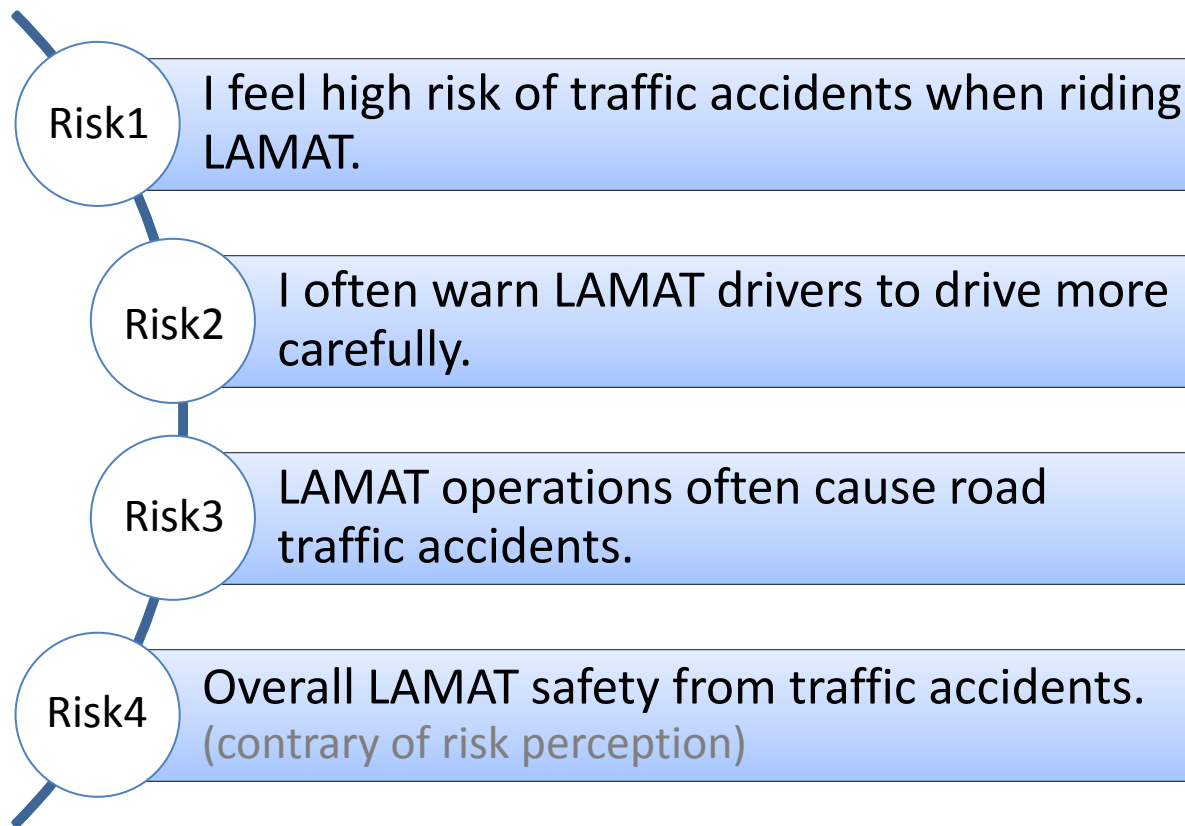
Note: As no previous study, these risk items are developed and combined to measure traffic risk perception.

Measures of Satisfaction   利用満足度に関する調査

- Literature shows 2 conceptualizations: (Jonhson et al., 1995)
  - Transaction-specific satisfaction (individual level)
  - Cumulative satisfaction (users' total consumption experience)

- This study refers cumulative satisfaction as users' overall impression of LAMAT service performance (e.g., service quality, drivers, vehicles).

Examples of questionnaire items:
  - I satisfy with overall transport service provided by LAMAT,
  - I satisfy with the behaviors of LAMAT drivers,
  - I satisfy with the general characteristics of LAMAT vehicles,
  - LAMAT fare is cheap,
  - etc.

Measures of User Loyalty　　愛着に関する調査

- I consider 2 LAMAT business conditions for 2 behavioral intentions.

User loyalty		Behavioral intentions	
		Future use	Recommend
LAMAT business	As usual	Loyalty1	Loyalty2
	Improve	Loyalty3	Loyalty4

Examples of questionnaire items: (Joewono and Kubota, 2007)

Loyalty1

I will use LAMAT when its business runs as usual

Loyalty2

I will recommend LAMAT to others when its business runs as usual

Loyalty3

I will use LAMAT when there is an improvement

Loyalty4

I will recommend LAMAT to others when there is an improvement

Outline

東南アジアの交通事故発生状況

- Since 2004, global traffic accidents cause 1.20-1.25 million deaths and 20-50 million injuries.

- The highest rates of accidents occur in Africa and *South-East Asia*.

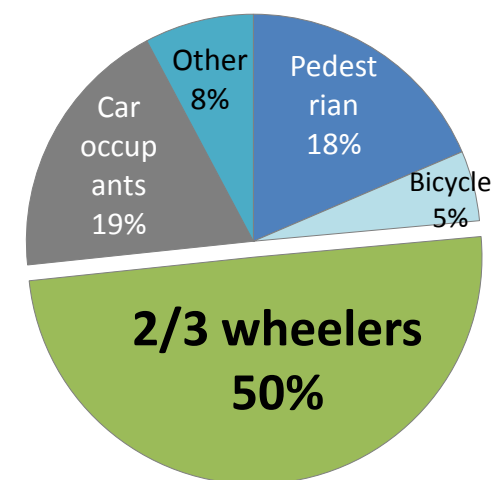Fig. Trend of Road Fatality Rates in *South-East Asia + Japan*
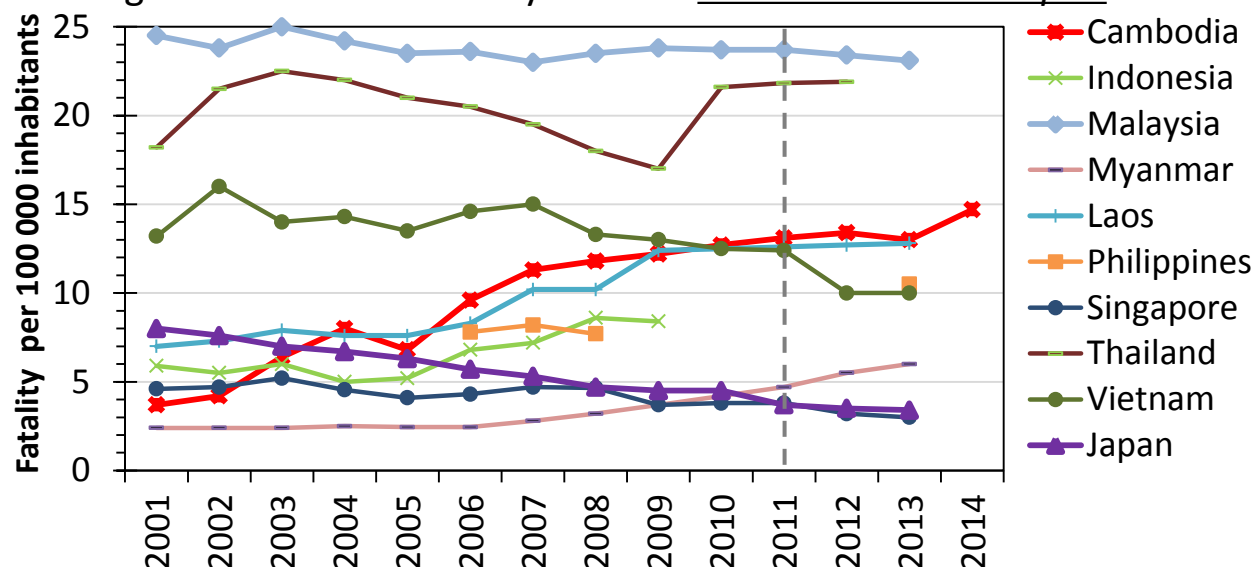
Source: WHO (2013&2015)

Fig. Share of fatalities by road users category

- Fatality rates increase in Cambodia, Laos, etc.

- Major fatalities occur among **2/3 wheelers**
(Thailand 73%, Cambodia 71%, Laos 67%, Philippines 53%)

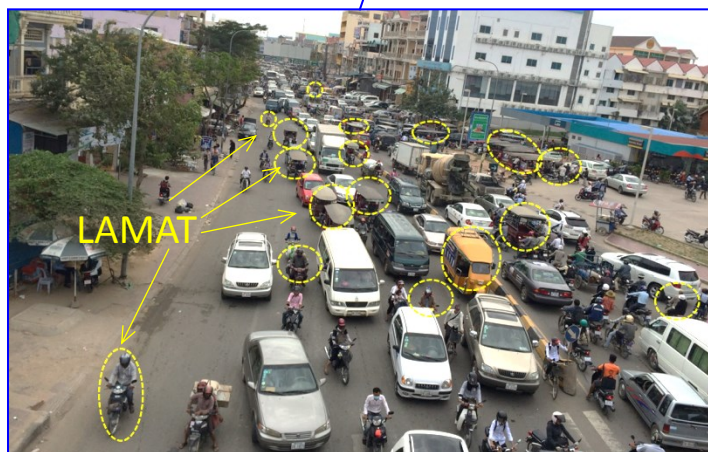➢ LAMAT with **2/3 wheelers** in Cambodia are selected as a case study.

Phnom Penh as a Case Study　　プノンペンの概要

Map data ©2016 Google

Phnom Penh

LAMAT

General traffic situation in Phnom Penh

- **Phnom Penh** is capital city of **Cambodia:**
  - Land area: 678.5 km^2
  - Population: 2.1 million
  - GPD per capita: 1020 USD
  - Vehicles registered : > 3.7 times since 2000
  - Trend of road fatalities: Increasing
  - Modal share 2012: **15.4% public transport**
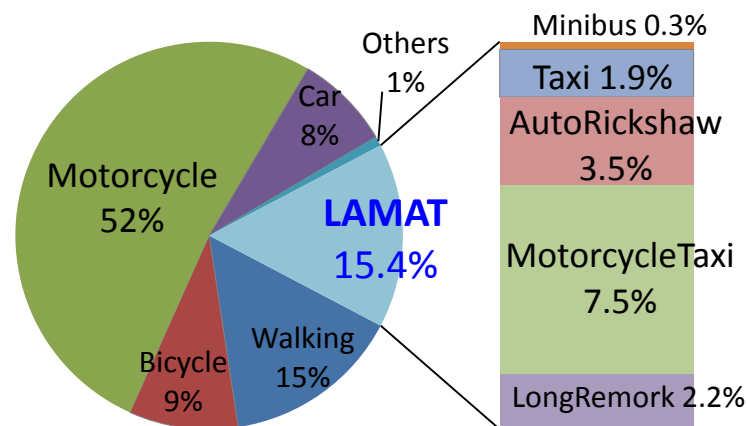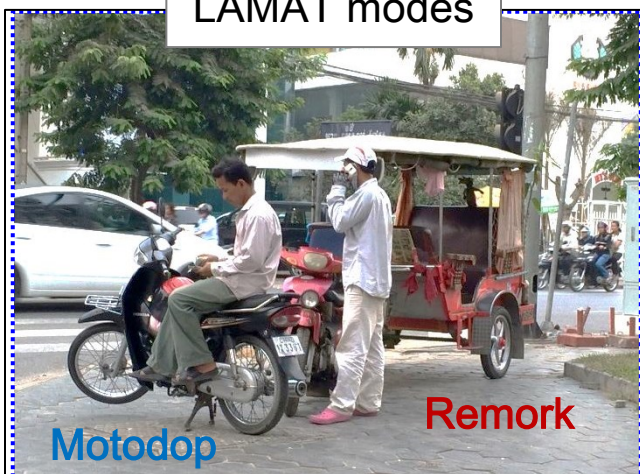
  (Source: JICA-PPUTMP, 2014)

Others 1%

Car 8%

Motorcycle 52%

LAMAT 15.4%

Walking 15%

Bicycle 9%

Minibus 0.3%

Taxi 1.9%

AutoRickshaw 3.5%

MotorcycleTaxi 7.5%

LongRemork 2.2%

Fig. Modal share in Phnom Penh, 2012

プノンペンの公共交通

LAMAT modes

Motodop

Remork

Long-tailed Remork

Taxi

Cyclo

Operating Routes of Public Bus 2014~

Legend
- Bus Line 1 (Feb.-Sept. 2014)
- Bus Line 1 (Sept. 2014 ~)
- Bus Line 2 (Sept. 2014 ~)
- Bus Line 3 (Sept. 2014 ~)
- Bus terminal
- National road
- Phnom Penh boundary
- District boundary

Kilometer 9   Russey Keo

Line 1 = 19.0 Km

Sen Sok

Por Senchey

Line 3 = 13.5 Km

PNH Airport

Chom Chau

Chroy Changvar

Daun Penh   Night Market   Arey Khsat

Phnom Penh

Chamkar Mon   Koh Pich

Mean Chey

Boeung Tompun

Line 2 = 19.0 Km

Boeung Chhouk

Chbar Ampov

Ta Kmau

Ta Khmau

0   2   4km

© OpenStreetMap contributors
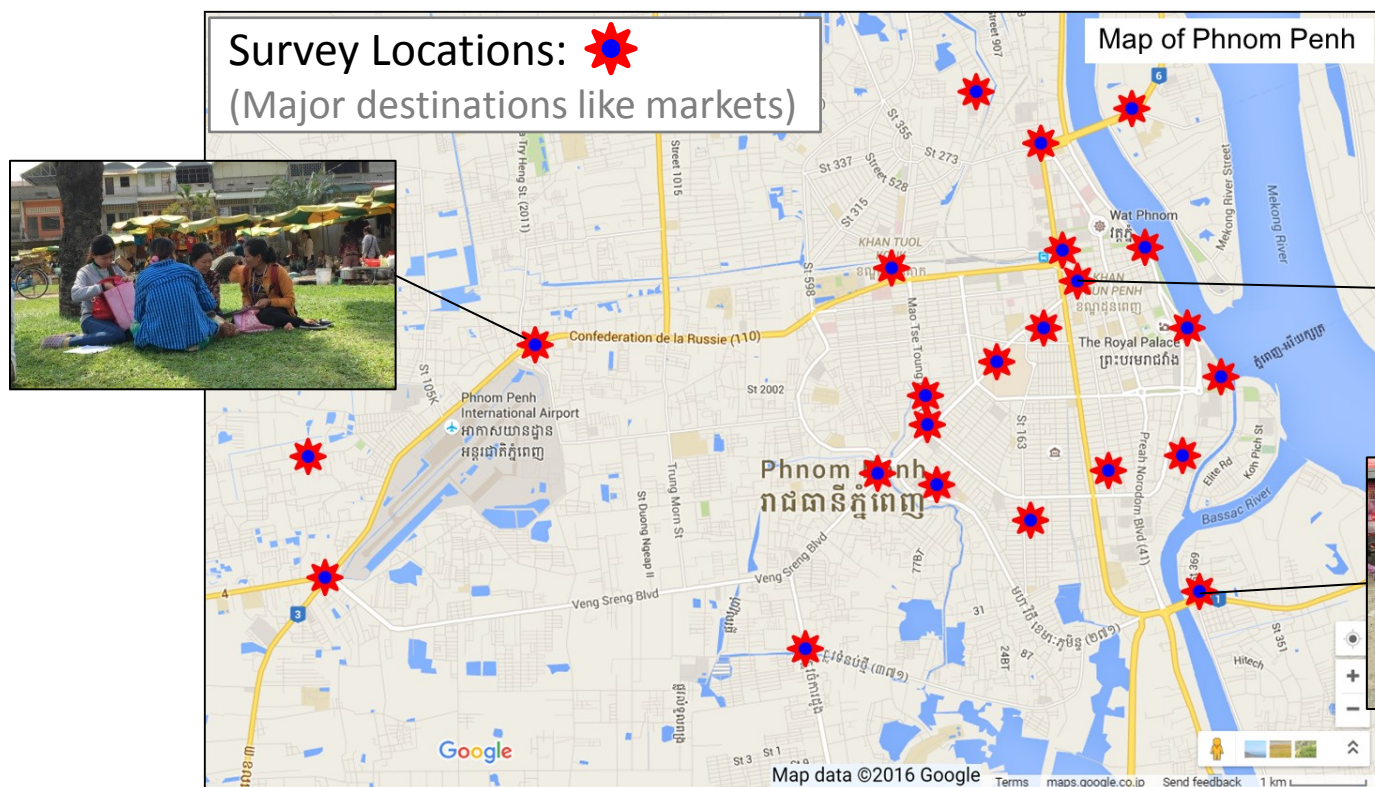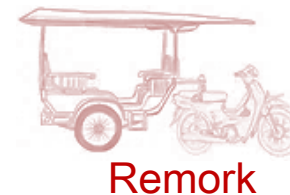
➤ This study focuses on **Motodop** and **Remork** (**2/3wheelers**), which are the most popular and active public transport modes in Phnom Penh.

(C) Dr. Veng Kheang PHUN, Japan Transport Research Institute, 2016

Interview Survey in Phnom Penh インタビュー調査の概要

- <u>Survey date:</u> May 13-20, 2016
- <u>Objective:</u> User experience & perception data about LAMAT service
- <u>Method:</u> Questionnaire-based face-to-face interview
- <u>Target:</u> Actual users of Motodop/Remork
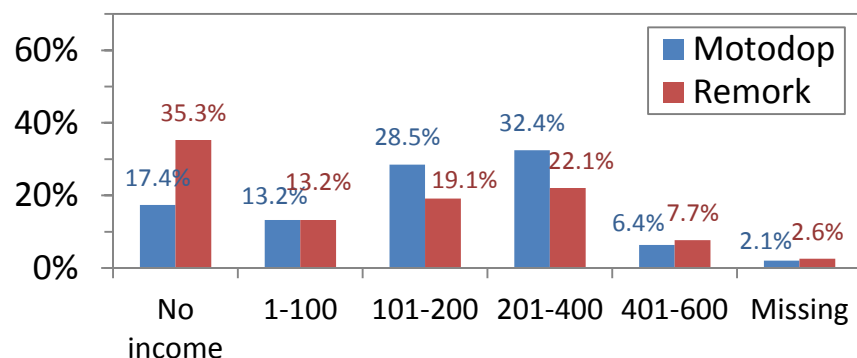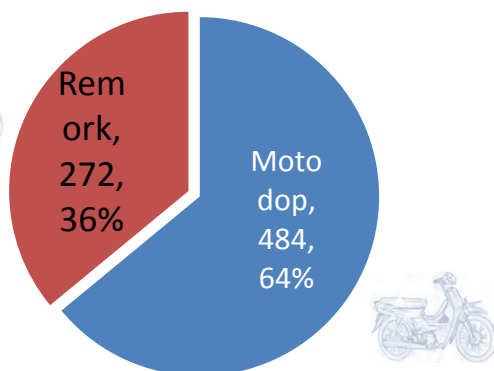- <u>Surveyor:</u> 11 well-trained students

Motodop   Remork

Survey Locations:
(Major destinations like markets)

Map of Phnom Penh

(C) Dr. Veng Kheang PHUN, Japan Transport Research Institute, 2016

Characteristics of Respondents   回答者の特性

Types of users

Pie chart:
- Remork, 272, 36%
- Motodop, 484, 64%

Monthly income (USD)

	Motodop	Remork
No income	17.4%	35.3%
1-100	13.2%	13.2%
101-200	28.5%	19.1%
201-400	32.4%	22.1%
401-600	6.4%	7.7%
Missing	2.1%	2.6%

Number of rides per week

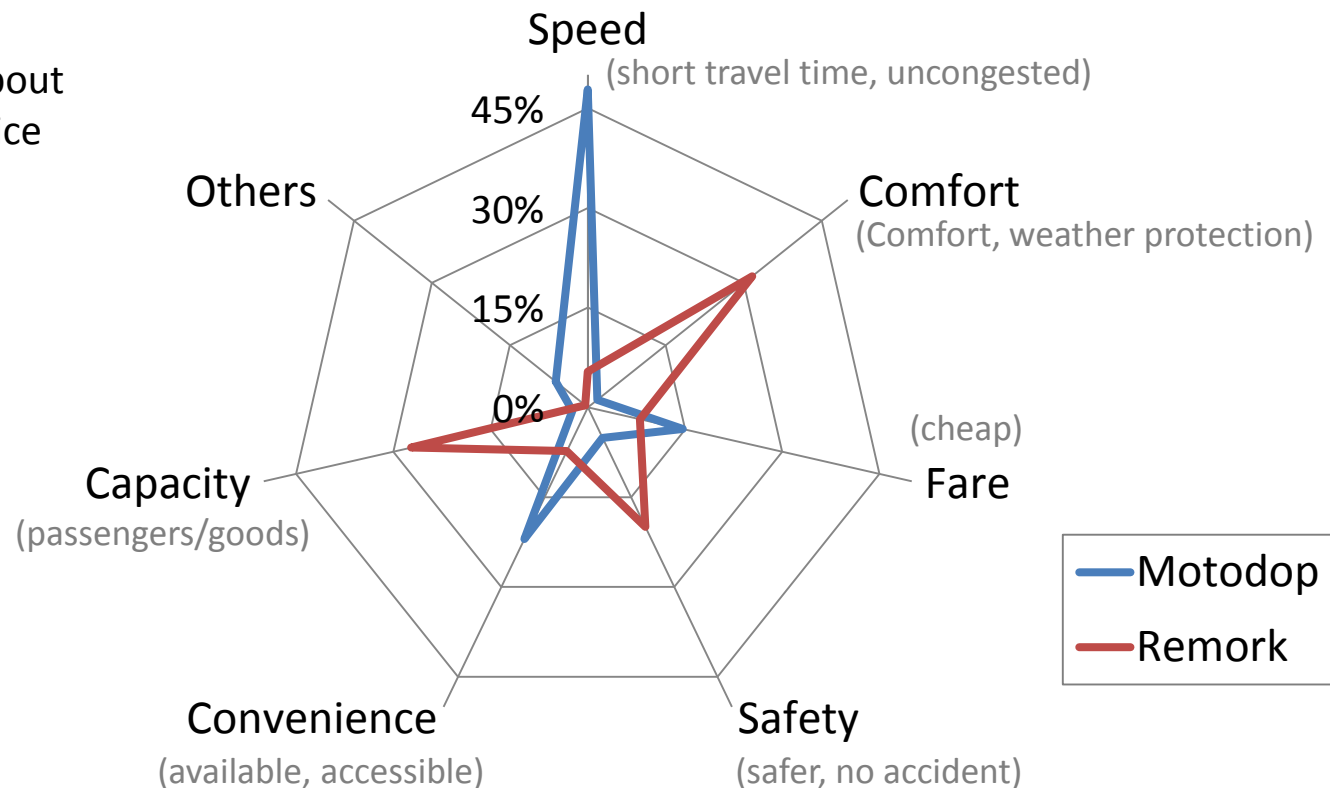|	Motodop	Remork
≤1	20.5%	29.4%
2-14	67.4%	66.2%
≥15	12.0%	4.0%
Missing	0.2%	0.4%
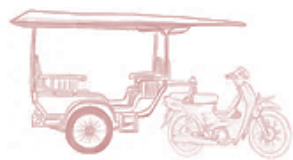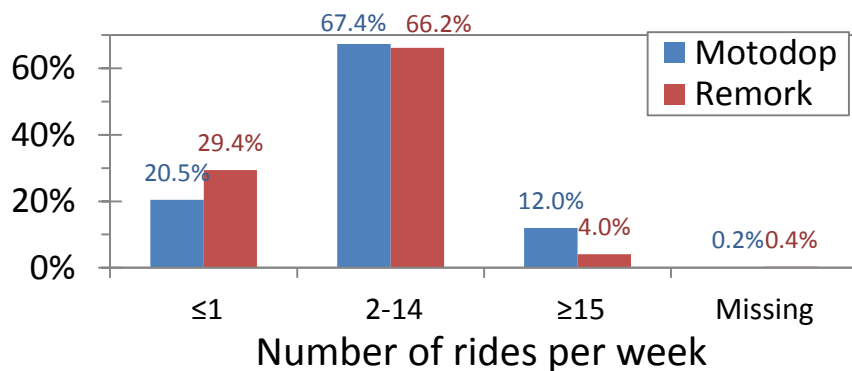
- Surveyors requested 1000 people.

- **756** of 791 responses are effective, aged 16-73, female 29%.

- 90% respondents **earnt less than 401USD per month** (~4万円/月) .

- Most of "no income" were students (68%) and housewives (25%).

- Majority (67%) were **habitual users**, riding 2-14 times per week.

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利用者が好む項目

- Respondents freely described what they liked/disliked about Motodop/Remork service.

Fig. What users <u>liked</u> about Motodop/Remork service

Speed
(short travel time, uncongested)

Comfort
(Comfort, weather protection)

(cheap)
Fare

Safety
(safer, no accident)

Convenience
(available, accessible)

Capacity
(passengers/goods)

Others

45%
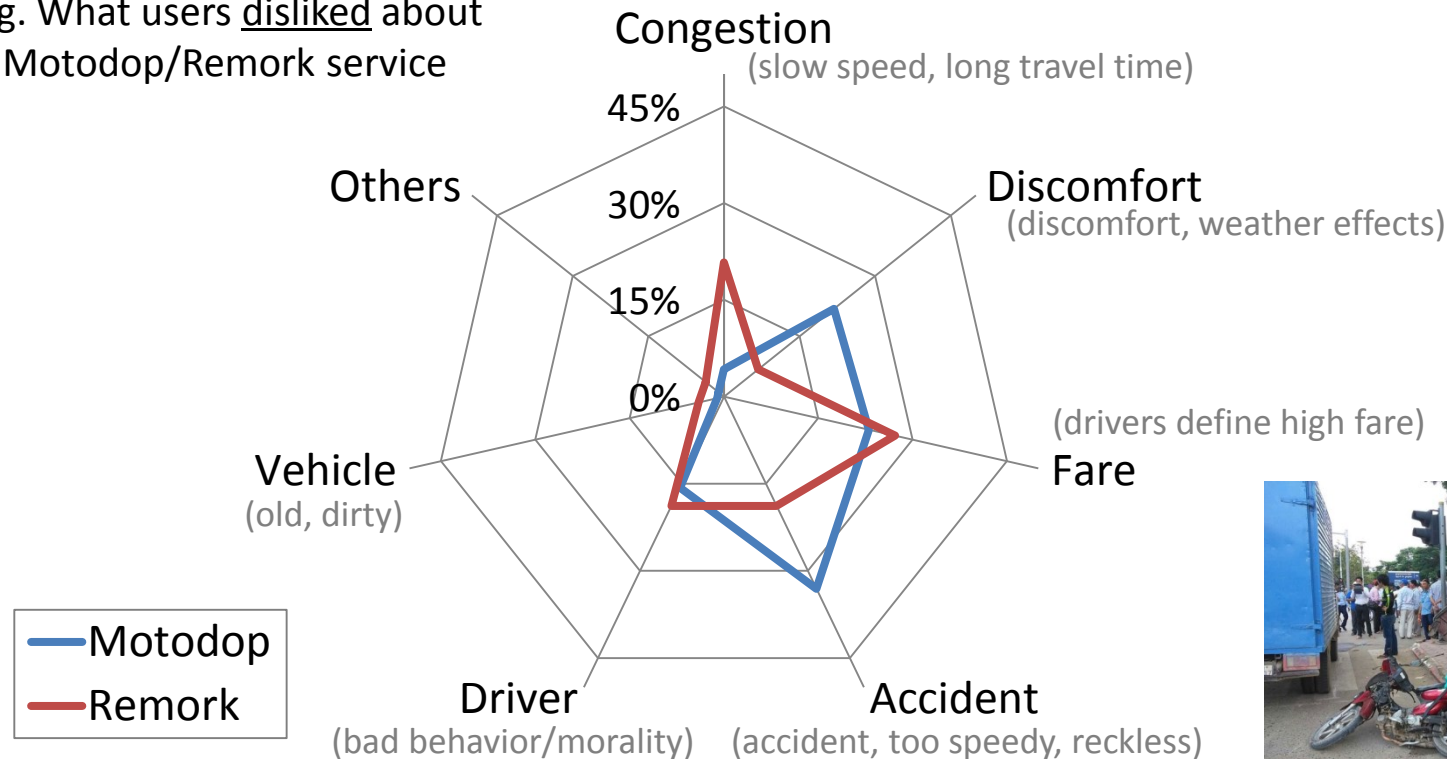30%
15%
0%

— Motodop
— Remork

➤ Motodop users liked fast speed, convenience, and low fare.

➤ Remork users liked comfort, transport capacity, and safety.

利用者が嫌う項目

Fig. What users <u>disliked</u> about Motodop/Remork service

Congestion
(slow speed, long travel time)

Discomfort
(discomfort, weather effects)

(drivers define high fare)
Fare

Others

Vehicle
(old, dirty)

Driver
(bad behavior/morality)

Accident
(accident, too speedy, reckless)

45%
30%
15%
0%
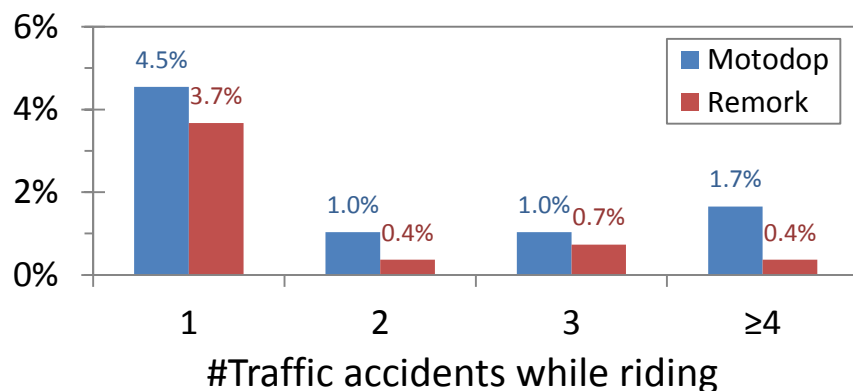
Motodop
Remork

Ros Chanveasna, 2014.

> Motodop users disliked most about traffic accident and discomfort.

> Remork users disliked about congestion, high fare, and driver behavior.

> Both users disliked excessive fare & bad behaviors of drivers.

交通リスクに関する経験

#Fines by traffic police while riding

#Traffic accidents while riding

Seriousness of traffic accidents
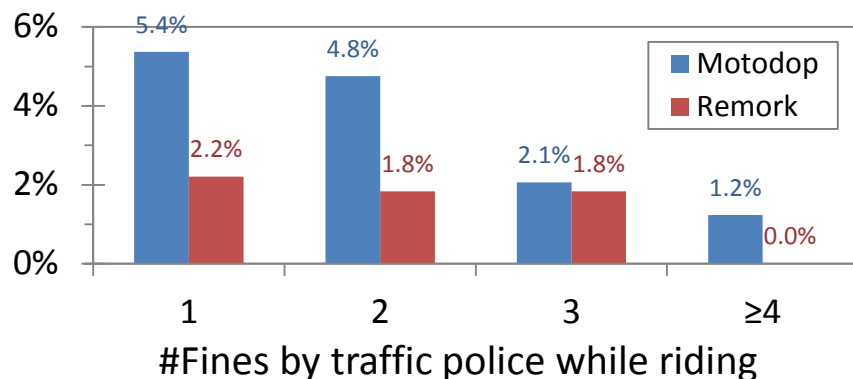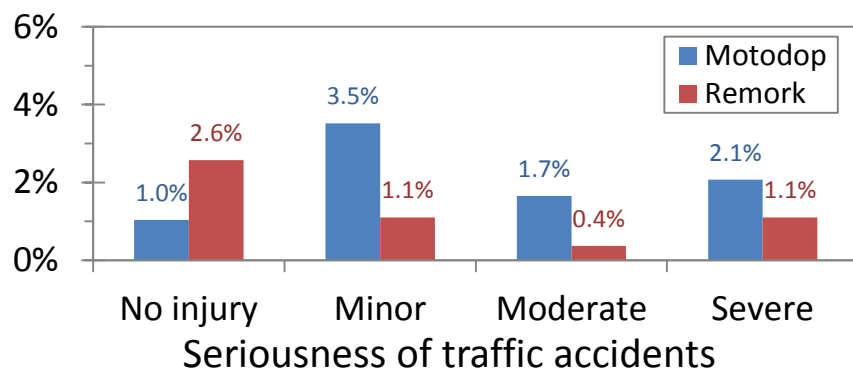
- 10.7% of respondents experienced at least one fine by traffic police while riding Motodop/Remork.

- 7.3% of respondents experienced at least one traffic accident while riding.

➢ Motodop users experienced traffic risks more frequent than Remork users.

➢ Motodop users also experienced more severe traffic injuries.

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Causes of Traffic Accidents　　交通事故の原因

- Respondents evaluated 8 possible causes of traffic accidents, on 5-point scale (1: very unlikely, 3: neither, 5: very likely).

- Mean scores were sorted:

Item	Subjective questions—Causes of traffic accidents	Motodop (484)		Remork (272)	
		Mean	SD	Mean	SD
1	Dangerous behavior of LAMAT drivers	**4.16**	0.79	**3.95**	0.94
2	There are big trucks in the city	**4.11**	0.88	**3.99**	0.98
3	Low awareness of other road users	**3.93**	0.89	**4.01**	0.84
4	Low traffic law enforcement by authorities	**3.84**	0.97	**3.95**	0.91
5	Poor infrastructure for general traffic flow	3.48	0.96	3.65	0.96
6	Poor environmental conditions along roads	3.43	0.90	3.52	0.89
7	Low quality of LAMAT vehicle	2.88	0.88	3.06	0.94
8	Low awareness of LAMAT users	2.46	1.13	2.66	1.26

> ➢ Minimal regulations for the first four items might lessen the level of traffic risk being perceived by Motodop/Remork users.

Outline

Full Structural Equation Model (SEM) 今回構築したモデル

- Full SEM contains 3 latent and 3 contextual variables.

- At least 4 indicators for each latent variable.

(See Appendix for full descriptions of variables)

Fig. Full structural equation model
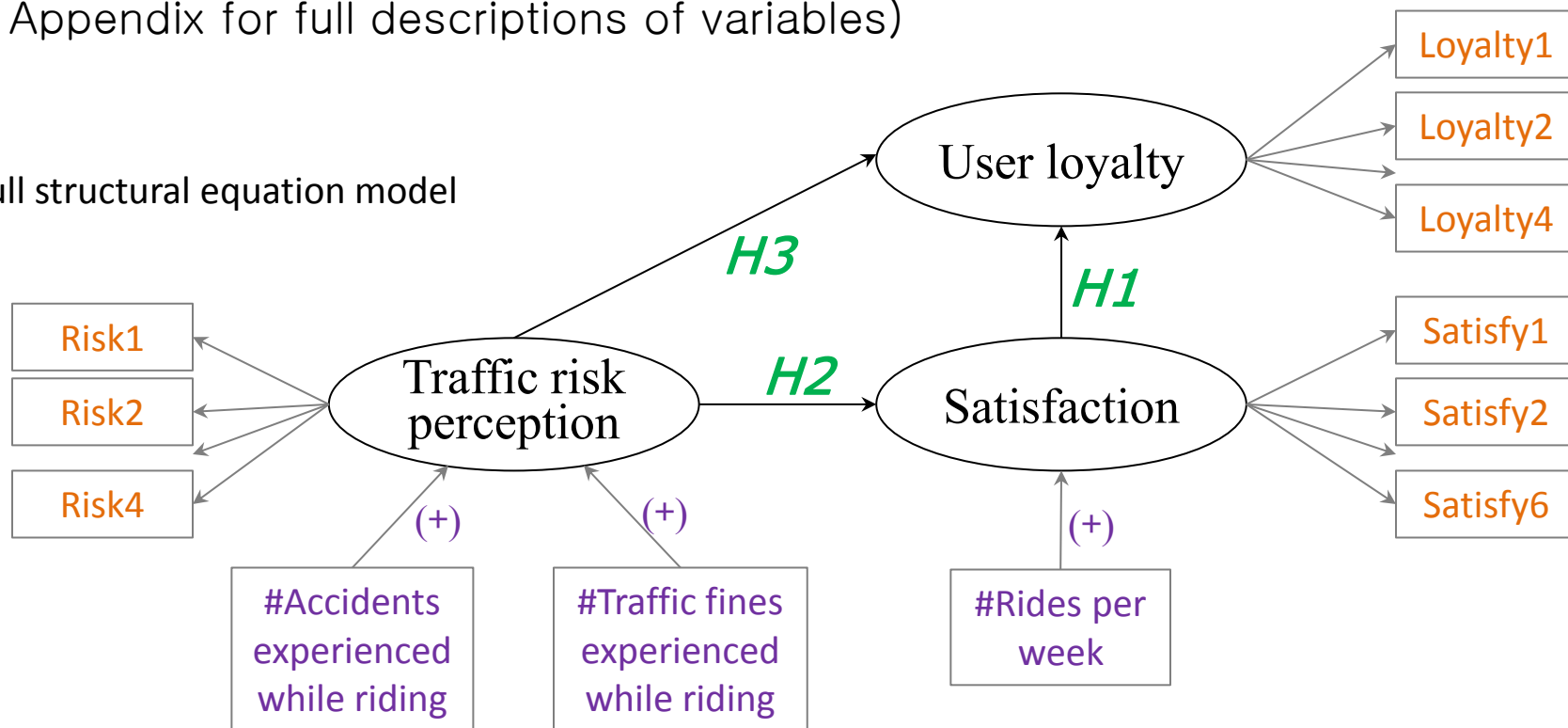
> Two separated SEMs for Remork (N = 272) and Motodop (N = 484) users.
> SEMs are estimated using method of moments in SPSS Amos 22 software.

(C) Dr. Veng Kheang PHUN, Japan Transport Research Institute, 2016

Estimate Results—Remork Users　モデルの推定結果1/2

- **All indicators** of latent variables are significant ($p < 0.05$). See Appendix.
- Overall fit of model (χ^2/d.f., GFI, AGFI, RMSEA) is acceptable.

Fig. Results for <u>Remork</u> users ($N = 272$)

χ^2/df = 2.648, RMSEA = 0.078
GFI = 0.887, AGFI = 0.850
$*p < 0.05$, $**p < 0.01$
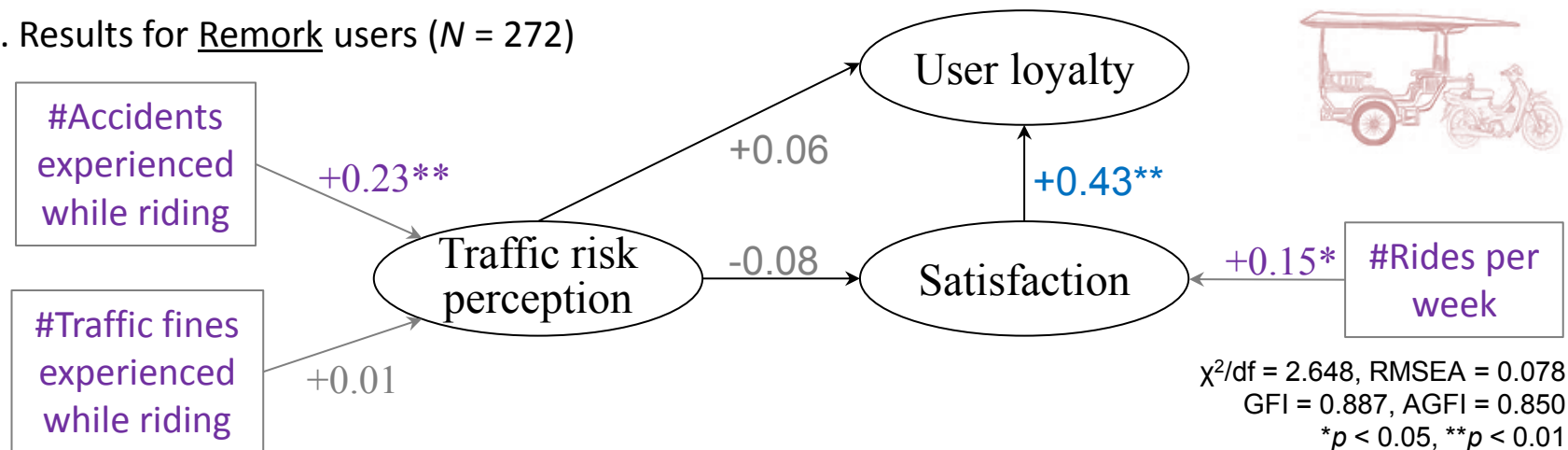
Testing hypotheses for Remork users

Hypotheses	Expected	Findings	Judgements
H1	Positive	+0.43**	Accepted
H2	Negative	-0.08	Insignificant
H3	Negative	+0.06	Insignificant

➢ Traffic risk perception had insignificant effect on Remork users.

- Latent variables are well measured by indicators ($p < 0.01$). See Appendix.
- Overall fit of model (χ^2/d.f., GFI, AGFI, RMSEA) is good.

Fig. Results for <u>Motodop</u> users ($N = 484$)

#Accidents experienced while riding → Traffic risk perception: +0.14*

#Traffic fines experienced while riding → Traffic risk perception: +0.16**

Traffic risk perception → User loyalty: **+0.16***

Satisfaction → User loyalty: +0.50**

Traffic risk perception → Satisfaction: -0.22**

#Rides per week → Satisfaction: +0.28**

χ^2/df = 3.688, RMSEA = 0.075
GFI = 0.907, AGFI = 0.878
*$p < 0.05$, **$p < 0.01$
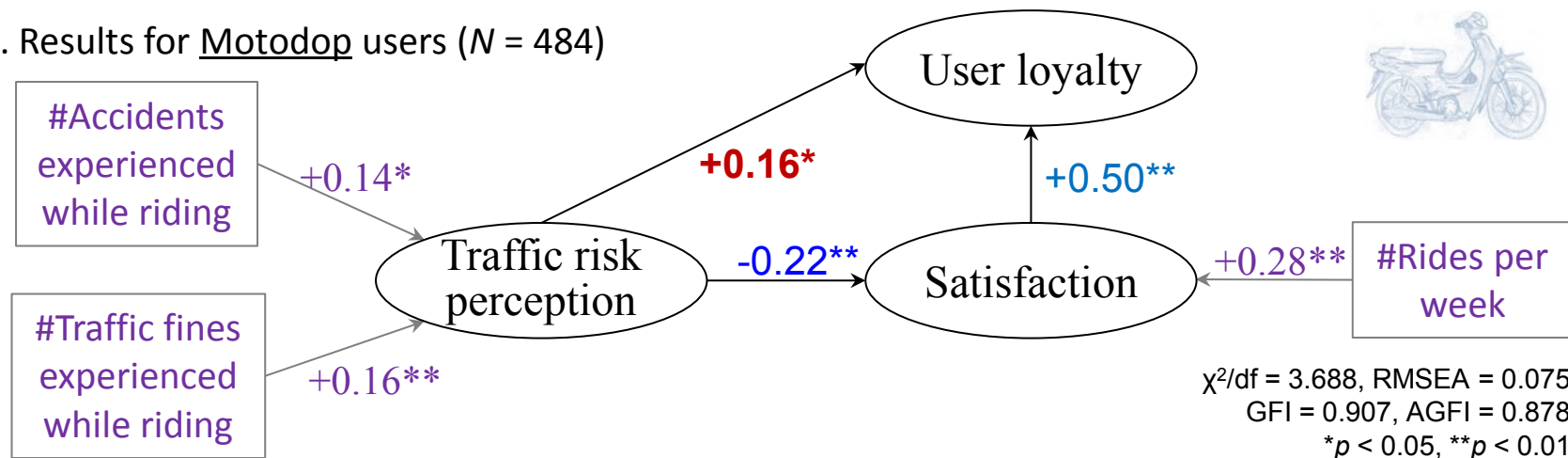
Testing hypotheses for Motodop users

Hypotheses	Expected	Findings	Judgements
H1	Positive	+0.50**	Accepted
H2	Negative	-0.22**	Accepted
H3	Negative	**+0.16***	**Rejected!**

➢ Traffic risk perception had significant effect on Motodop users.

- Finding (*H3*): Users seem to tolerate the risk of traffic accidents and would continue to use Motodop service **because**:

① **Users with higher traffic risk perception had fewer modal choice (63.4%).**
- Motodop available almost everywhere, Remork at common places only
- Poor supply of other modes, Motodop service tend to be riskier
- Repeat using Motodop because of limited modal choice, but not loyalty

Table. Share of "No choice" as a reason to choose Motodop, among other factors.

		User loyalty (Total scores of 4 indicators)	
		Low (n = 24)	**High** (n = 460)
Traffic risk perception (Total scores of 4 indicators)	**Low** (n = 91)	*Reject H3* No choice 1.2%	*Accept H3* No choice 12.8%
	High (n = 393)	*Accept H3* No choice 3.5%	*Reject H3* No choice 63.4%

Note: Low is defined when the total scores of 4 indicators are 4-11, and High is defined when the total scores are 12-20. "No choice" convers no other transport modes, no own vehicles, and no one to drive for.

② **Majority (52%) were young users** (age ≤ 30) **and were risk-takers,** comparing to older users (age >30) [t-test (478.309) = -2.1, p = 0.038].

Implications 　　含意

➤ Users did not concern with risk of traffic accidents involving Remork service. *So, the operation of Remork should be left as it is*.

➤ Users had lower satisfaction when they perceived higher traffic risk, but still they were likely to continue using Motodop service.

✓Feasible policies/regulations *to improve safety for Motodop*:
  -Additional training for drivers (e.g., traffic rules, safe driving)
  -Traffic law enforcements (e.g., speed, parking, big trucks)
  -Traffic safety campaigns for all road users (e.g., awareness)

✓Another possible policy/regulation is to *formalize Motodop service*:
  -Professional transport service (e.g., license plate, uniform, fare rate)
  -Control driver behaviors (e.g., pick-up stations, growth control)
  -Safety equipment (e.g., gloves, handles, helmets)

Outline

リサーチクエクチョンへの回答

(1) Does a LAMAT operation influence on users' traffic risk perception?

Answer: "**YES**", because all indicators and most contextual variables of "Traffic risk perception" are significant ($p < 0.05$).

(2) Does this perception affect user satisfaction and loyalty to a LAMAT?

Answer: "**YES**" for Motodop users but "**NO**" for Remork users, as evidenced by significant and insignificant *H2 & H3*.

(3) What are possible strategies to improve users' traffic risk perception?

Answer: **Possible strategies** are:

-Additional training to drivers

-Traffic law enforcements

-Traffic safety campaigns for all road users

-Formalization of a LAMAT service (i.e., motorcycle taxi)

Conclusion   まとめ

Summary

- This study explored the effects of traffic risk perception on satisfaction and loyalty of LAMAT (Motodop and Remork) users in Phnom Penh.

  ✓ *Users dissatisfied with traffic risk involving Motodop service, but they tolerated the risk and would continue to use Motodop because :*

  -Users with higher traffic risk perception had fewer modal choice,

  -Majority were younger users and were risk-takers.

  ✓ *Users preferred to travel by Remork because of comfort, capacity, and safety. They did not concern about risk of traffic accidents.*

Future works

- The study on traffic risk perception for LAMAT users remains in its fancy.

  -Whether traffic risk perception is improved by proposed policies/regulations?

  -More case studies to generalize the research findings.

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Appendix　付記

Variables of the Model 1/2

Questionnaire items (Abbreviation)	Mean SD	All users	Motodop	Remork	Welch's t-test[1]
Latent variables[2]:					
Satisfaction					
I satisfy with overall transport service by	Mean	3.67	3.52	3.95	-7.70**
Motodop/Remork (Satisfy1)	SD	0.79	0.79	0.70	
I satisfy with the behavior of Motodop/Remork	Mean	3.59	3.50	3.74	-3.86**
drivers (Satisfy2)	SD	0.83	0.84	0.80	
I satisfy with general characteristics of	Mean	3.63	3.52	3.81	-4.83**
Motodop/Remork vehicle (Satisfy3)	SD	0.80	0.81	0.75	
Motodop/Remork fare is cheap (Satisfy4)	Mean	3.18	3.14	3.25	-1.39
	SD	1.05	1.07	1.02	
Motodop/Remork speed is fast and reliable	Mean	3.58	3.50	3.72	-3.29**
(Satisfy5)	SD	0.91	0.93	0.86	
Motodop/Remork could help to carry my	Mean	4.05	3.87	4.38	-8.92**
belongings (Satisfy6)	SD	0.84	0.86	0.70	
Traffic risk perception					
I feel high risk of road accidents when riding	Mean	3.53	3.75	3.14	6.50**
Motodop/Remork (Risk1)	SD	1.22	1.12	1.30	
I often warn Motodop/Remork drivers to drive	Mean	3.62	3.82	3.27	6.11**
more carefully (Risk2)	SD	1.18	1.11	1.23	
The Motodop/Remork operation often causes	Mean	3.15	3.26	2.96	4.58**
road accidents (Risk3)	SD	0.85	0.79	0.92	
Overall Motodop/Remork safety from road	Mean	3.11	2.89	3.50	-9.97**
accidents (Risk4)	SD	0.91	0.92	0.73	

Variables of the Model 2/2

Questionnaire items (Abbreviation)	Mean SD	All users	Motodop	Remork	Welch's t-test[1]
Latent variables[2]:					
User loyalty					
Future use when business run as usual (Loyalty1)	Mean	3.63	3.62	3.64	-0.45
	SD	0.83	0.84	0.80	
Recommend others when business run as usual (Loyalty2)	Mean	3.29	3.24	3.39	-2.04*
	SD	1.02	1.04	0.99	
Future use when there is an improvement (Loyalty3)	Mean	4.39	4.38	4.42	-0.65
	SD	0.67	0.66	0.69	
Recommend others when there is an improvement (Loyalty4)	Mean	4.06	4.04	4.11	-1.21
	SD	0.77	0.76	0.79	
Contextual variables:					
Experiences with fines by traffic police while riding Motodop/Remork (ExpFine)	Mean	0.21	0.26	0.11	3.15**
	SD	0.72	0.81	0.50	
Experiences with road accidents while riding Motodop/Remork (ExpAccid)	Mean	0.17	0.21	0.10	2.07*
	SD	0.85	0.97	0.59	
Frequency of riding Motodop/Remork per week (FreqWeek)	Mean	6.60	7.83	4.40	6.87**
	SD	7.84	8.87	4.84	

[1]To compare for differences in mean scores between Motodop and Remork users.
[2]Indicators of latent variables are based on 5-point scale and most range between 1 and 5.
*$p < 0.05$, **$p < 0.01$

Full Estimate Results 1/2

- Estimate results of 3 SEMs, with standardized effects.

Path			All users	Motodop	Remork
Causal relationship					
User loyalty	←	Satisfaction	0.484**	0.496**	0.426**
Satisfaction	←	Traffic risk perception	-0.311**	-0.219**	-0.077
User loyalty	←	Traffic risk perception	0.154**	0.163*	0.064
Latent constructs					
Loyalty1	←	User loyalty	*0.788*	*0.824*	*0.745*
Loyalty2	←	User loyalty	0.700**	0.687**	0.675**
Loyalty3	←	User loyalty	0.270**	0.244**	0.349**
Loyalty4	←	User loyalty	0.319**	0.266**	0.414**
Satisfy1	←	Satisfaction	*0.680*	*0.689*	*0.569*
Satisfy2	←	Satisfaction	0.577**	0.511**	0.704**
Satisfy3	←	Satisfaction	0.564**	0.550**	0.549**
Satisfy4	←	Satisfaction	0.535**	0.550**	0.524**
Satisfy5	←	Satisfaction	0.567**	0.576**	0.487**
Satisfy6	←	Satisfaction	0.339**	0.248**	0.372**

Full Estimate Results 2/2

	Path		All users	Motodop	Remork
Risk1	←	Traffic risk perception	*0.699*	*0.703*	*0.657*
Risk2	←	Traffic risk perception	0.477**	0.431**	0.471**
Risk3	←	Traffic risk perception	0.431**	0.440**	0.402**
Risk4	←	Traffic risk perception	-0.408**	-0.319**	-0.231*
Contextual variables					
Traffic risk perception	←	ExpFine	0.152**	0.157**	0.013
Traffic risk perception	←	ExpAccid	0.153**	0.144*	0.226**
Satisfaction	←	FreqWeek	0.203**	0.284**	0.148*
N	=		756	484	272
χ^2	=		625.000	427.853	307.176
d.f.	=		116	116	116
χ^2/d.f.	=		5.388	3.688	2.648
GFI	=		0.911	0.907	0.887
AGFI	=		0.883	0.878	0.850
RMSEA	=		0.076	0.075	0.078

Numbers in italic were fixed to one.
*$p < 0.05$, **$p < 0.01$
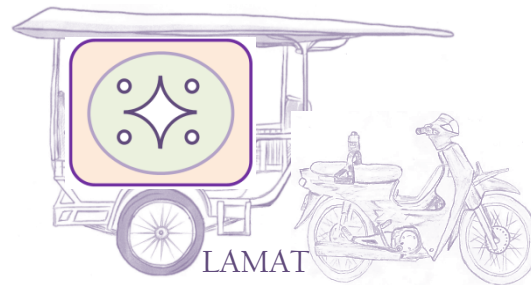
Thanks for Your Attention!
ご清聴ありがとうございました。

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