Final Report

Research Grant 2021

ATRANS

ASIAN TRANSPORTATION RESEARCH SOCIETY

Road Rage: Causes, Impacts, Legal Measures, and Road Traffic Accidents

Asst.Prof.Pol.Lt.Col.Waiphot Kulachai, Ph.D.
Assoc.Prof. Chulaporn Sota, Ph.D.
Asst.Prof.Junphen Wannarak, Ph.D.
Patipol Homyamyen

Road Rage: Causes, Impacts, Legal Measures, and Road Traffic Accidents

ASIAN TRANSPORTATION RESEARCH SOCIETY

902/1 9th Floor, Glas Haus Building, Soi Sukhumvit 25 (Daeng Prasert),
Sukhumvit Road, Klongtoey-Nua, Wattana, Bangkok 10110, Thailand
Tel. (66) 02-661-6248 FAX (66) 02-661-6249
http://www.atransociety.com

List of Members

• Project Leader •

Asst.Prof.Pol.Lt.Col. Waiphot Kulachai, Ph.D.

Suan Sunandha Rajabhat University

• Project Members •

Assoc.Prof.Chulaporn Sota, Ph.D.

College of Asian Scholars

Asst.Prof.Junphen Wannarak, Ph.D.

Rajamangala University of Technology Suvarnabhumi

Patipol Homyamyen

Rajamangala University of Technology Suvarnabhumi

• Advisors

Tuenjai Fukuda, Ph.D.

Nihon University

Pol.Col.Chinda Klabklay

Independent Scholar

Table of Contents

Page

Lists of Figures

Page

List of Tables

Page

List of Abbreviations and Acronyms

ADB	Aggressive driving behaviors
AOD	Anonymity of other drivers
ETA	Experience of traffic accident
HW	Hot weather
IOC	The index of item – objective congruence
MV	Make of vehicle
PRC	Poor road condition
PRR	Perpetrator of road rage
SD	Standard deviation
TC	Traffic congestion
VRR	Victimization of road rage
WHO	World Health Organization

CHAPTER I INTRODUCTION

1.1 Rationale

Road traffic accident has become a major problem in many countries as it causes many deaths and injuries. According to the Global Status Report on Road Safety 2018 (WHO, 2018) reported that the number of road traffic deaths worldwide remains unacceptably high. There were about 1.35 million deaths each year and most of them were children and young adults. The most vulnerable group of road traffic accident are pedestrians, cyclists, and motorcyclists. Thailand has also been affected by a great number of road traffic accidents. During 2015-2019, the number of road traffic accidents had increased from 69,394 to 99,087 accounting for 42.79%. The number of traffic deaths had increased from 6,273 to 8,648 or approximately 37.86% increase. In addition, the number of injuries increased by 237.20% from 18,120 in 2015 to 61,101 in 2019 (Ministry of Land Transport, 2020). The main causes of road traffic accidents in Thailand consists of exceeding speed limit, dangerous lane changing, driving too close to leading vehicle, inexperience or new driver, not giving to right of way, and drink driving (National Statistical Office, 2014). Some main causes are associated with road rage, usually defined as aggressive or angry driving behaviors, such as rude gestures, verbal insults, physical altercation, deliberately driving in an unsafe or threatening manner, or making threats (Xu et al., 2017). In addition, Stephens and Ohtsuka (2014) found that road rage and illusion of control beliefs (feelings of control over the situation) accounted for 37 percent of the variance in hostile driving behavior scores.

Road rage constitutes a broad range of aggressive driving behaviors, ranging from milder behaviors, such as verbally expressing anger through closed windows or using the lights of the vehicle to express frustration, to using hostile hand and facial gestures, screaming, honking, firing gun shots, hitting vehicles and chasing vehicles, which can result in criminal acts, intentional violence and even murder (Dula & Geller, 2003; Wells-Parker et al., 2002). Tasca (2000) defined such behaviors as a behavior which is deliberate, likely to increase the risk of collision and motivated by impatience, annoyance, hostility and/or attempt to save time.” There are some situational factors that have been linked with incidents of road rage include increasing congestion on roads (Sharkin, 2004), high temperature (Shinar, 1998), poor road conditions (Galovski & Blanchard, 2004), make of vehicle (Smart, Stoduto, Mann, & Adlaf, 2004) and anonymity of other drivers (Ellison, Govern, Petri, & Figler, 1995).

In Thailand, there are many road rage cases appearing in newspaper, television, and social medias. Earlier this year, a passenger van driver was wounded in a road-rage

incident on Saturday 9, 2021, after shots were fired by a man who later claimed the van had cut in front of his car (Bangkok Post, 9 January 2021). Another case is reported by Taylor (2021) “angry passenger attacks motorbike driver following collision in Pattaya.” This case was occurred on the 12th of January 2021. However, research on this issue is quite rare. We, therefore, would like to examine antecedents and impacts of road rage as well as legal measure to deal with this problem. Furthermore, we would like to examine relationship between road rage and road traffic accidents as well as illustrated in the proposed conceptual framework.

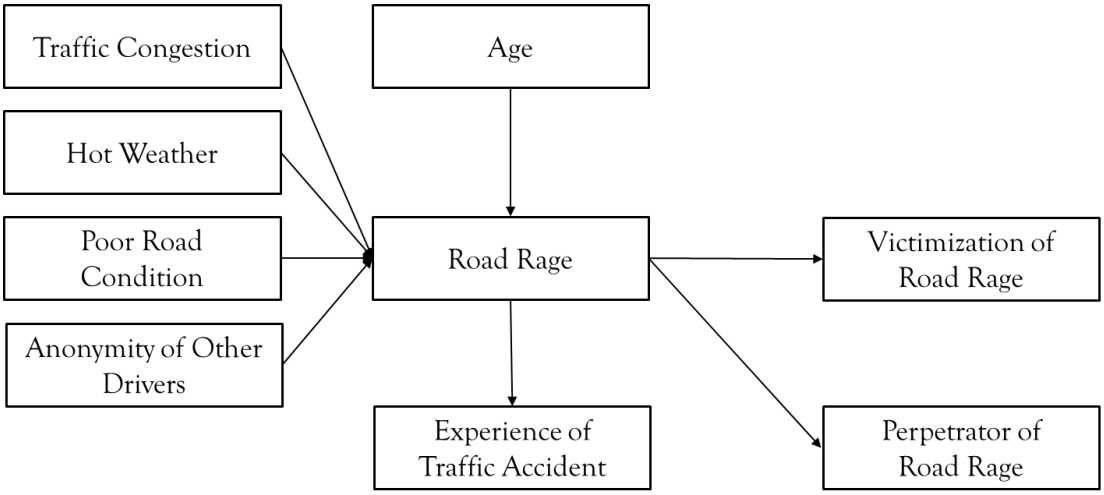

Figure 1 Proposed conceptual framework

1.2 Research Questions

1. What are the causes of road rage?
2. What are the impacts of road rage?
3. What are suitable legal measures to handle with road rage issue?
4. Is there a relationship between road rage and road traffic accidents?
5. What suggestions and recommendations should be proposed to policy makers?

1.3 Objectives

The objectives of this study are as followings:

1. To examine causes of road rage.
2. To examine impacts of road rage.
3. To examine legal measures against road rage.
4. To find out relationship between road rage and road traffic accident.
5. To provide suggestions and recommendations to policy makers.

1.4 Research Benefits

1. The findings of this research will catch attention from public to place importance on road rage issue.
2. The findings of the study can be used as an evident in policy making process to deal with road rage issue in Thailand.
3. Researchers and scholars can apply the findings in their research in the future.

CHAPTER 2 METHODOLOGY

2.1 Research Design

This research is mixed-method research consisting of quantitative and qualitative technique.

2.2 Quantitative Research

2.2.1 Population

The population of this study is road users in Bangkok, whose age is 20 years old or older.

2.2.2 Sample

Bujang et al. (2017) suggested that smaller minimum sample sizes required for performing MLR when r-squared is used as the effect size. However, the validation results based on an evaluation from a real-life dataset suggest that a minimum sample size of 300 or more is necessary to generate a close approximation of estimates with the parameters in the population. Hence, they recommended taking a larger sample size such as 300 or more is necessary for survey that is conducted in a non-experimental manner.

2.2.3 Research Tool

Questionnaire was employed as a research tool. It consists of 10 parts as followings.

1. Demographic information
2. Traffic congestion
3. Hot weather
4. Poor road condition
5. Make of vehicle
6. Anonymity of other drivers
7. Aggressive driving behaviors
8. Victimization of road rage
9. Experience of road traffic accident
10. Perpetrator of road rage

2.2.4 Validity

Each item will be assessed by transportation experts giving the item rating of 1 for clearly measuring, -1 for clearly not measuring, and 0 for unclear measuring. Finally, the index of item – objective congruence (IOC) will be calculated using the formula developed by Rovinelli and Hambleton (as cited in Kotchapong, 2008) for each item of the questionnaire.

Prasitrattasin (2007) suggested that the IOC index higher than .50 is determined as valid. Hence, any item with IOC index lower than .50 will be deleted or the statements will be revised in accordance with the recommendations of the experts. The results showed that the IOC values were between 0.6 – 1.00 indicating acceptable validity.

2.2.5 Reliability

The reliability of each measurement, measure of internal consistency, will be examined employing Cronbach's alpha coefficient (Cronbach, 1951). George and Marry (as cited in Gliem & Gliem, 2003) suggested that the Cronbach's alpha coefficient >.90 – Exccellent, >.80 – Good, >.70 – Acceptable, >.60 – Questionable, >.50 - Poor, and <.50 – Unacceptable. Table 1 illustrates that all measures obtain the Cronbach's alpha greater than .90 indicating excellent reliability.

Table 1 Cronbach's Alpha

Measures	Item	Cronbach's Alpha
1. Traffic congestion	5	.971
2. Hot weather	4	.941
3. Road condition	5	.923
4. Anonymity	5	.950
5. Aggressive driving behaviors	8	.984
6. Victimization		
- Intimidating behaviors	5	.935
- Experience of road rage	5	979
7. Perpetrator		
- Intimidating behaviors	5	.975
- Experience of road rage	5	.992

2.2.6 Data Collection

During July-September 2021

2.2.7 Data Analysis

The primary data will be collected using questionnaires as a research tool. Well-trained research assistants are assigned to collect data. Then, descriptive statistics such as frequency, percentage, mean, median, and standard deviation (SD) will be applied in data analysis. In addition, multiple regression analysis will be employed to examine relationship between independent and dependent variables.

2.3 Qualitative Research

2.3.1 Key Informants

There were 20 key informants who had experienced road rage incidents. Snowball sampling was used to select the key informants. Criteria for selecting key informants are defined as follows:

1. Being a road user in Bangkok.
2. Experienced in road rage in the past 10 years as perpetrator or victim.
3. Willing to cooperate or participate in this study.

2.3.1 Research Tool

In-depth interview using semi-structured interview.

2.3.2 Data Collection

During July-September 2021.

2.3.3 Data Analysis

Narrative analysis will be employed in this study. This method is used to analyze content from various sources, such as interviews of respondents, observations from the field, or surveys. It focuses on using the stories and experiences shared by people to answer the research questions.

CHAPTER 3 RESEARCH PLAN

3.1 Project Schedule

This project is a 1-year project. The timeframe of this research is scheduled as illustrated in Table 2.

Table 2 Timeframe

Activities	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Review of literature	■											
Inception report submission	■											
Questionnaire Validation		■										
Progress report			■									
Data collection				■	■							
Data analysis						■						
Interim report presentation & submission							■					
Roundtable discussion & workshop								■				
Final report presentation & comments									■			
Final report preparation & submission										■	■	■

3.1 Project Expenditure

The total budget of the project is 350,000 (Three hundred and fifty thousand Baht) and the expenditure of this project is illustrated in Table 3.

Table 3 Project expenditure

No.	Description	Cost/Unit	Unit	Amount (Baht)
1	Project leader	3,000	12	36,000
2	Research assistants	6,000	12	72,000
3	Expenses for project meeting (3 project members x 12)	1,000	36	36,000
4	Survey Data collection	980	100	98,000
5	In-depth interview	2,000	20	40,000
6	Transportation & Petrol	3,000	30	90,000
7	Office and computer supply	5,000	1	5,000
8	Document & Copy	5,000	1	5,000

Table 3 Con't

No.	Description	Cost/Unit	Unit	Amount (Baht)
9	Secretariat's participation portion	10,000	1	10,000
10	Advisor	10,000	1	10,000
11	Data coding & analysis	40,000	1	40,000
12	Publishing proportion of the report book	20,000	1	20,000
	Total			462,000

3.3 Project oversight

The project oversight component of this research has been designed to track and provide guidance, comments, and recommendations at key stages of the project from different perspectives.

1. Project advisors – two advisors are assigned to provide independent assessment and review of major outputs. Then, they responsible for giving comments and recommendations on technical excellence and relevance.

2. Consultative forum – to ensure the relevance and completeness of the findings, this forum or roundtable discussion will be held to gain comments and recommendations from various perspectives.

CHAPTER 4 RESULTS

4.1 Quantitative Research Results

4.1.1 Participants

The questionnaire was distributed to the prospect participants both online and off-line. The authors obtained 987 respondents.

Table 4 Participant information

Demographic information	Frequency	Percentage
Gender		
Male	563	57.04
Female	424	42.96
Education		
Secondary school or lower	4	0.41
High school/Vocational College	242	24.52
High Vocational College	176	17.83
University	565	57.24
Marital status		
Single	758	76.80
Married	207	20.97
Divorced	16	1.62
Separated	6	0.61
Occupation		
Government official	472	47.82
Government enterprise employee	26	2.63
Employee	93	9.42
Businessman owner	23	2.33
Farmer/Laborer	25	2.53
Others	348	35.26
Income		
Less than 5,000 Baht/month	230	23.30
5,000 - 10,000	113	11.45
10,001 – 15,000 Baht/month	308	31.21
15,001 – 20,000 Baht/month	128	12.97
20,001 – 25,000 Baht/month	73	7.40
25,000 or over	135	13.68

According to Table 4, there were 563 male accounting for 57.04%. The majority obtained bachelor's degree (57.24%). Most respondents were single (76.80%) and around 47.82 working as government officials. Their average income was around 10,001 – 15,000 Baht/month (31.21%).

Table 5 Age, Family size, and Experience of road traffic accidents

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	987	17.0	65.0	30.330	10.4480
FAMS	987	1.0	10.0	4.198	1.6531
ACC	987	.0	6.0	1.079	1.1847
Valid N (listwise)	987				

Table 5 indicates that the minimum and maximum age of the respondent is 17 and 65 years old in that order, with the average of 30 years old (Mean = 30.33, SD = 10.45). Their family sizes are ranging from 1 to 10 with the average of 4 members per family (Mean = 4.20, SD = 1.65). The average of experience in road traffic accident during the past three years is 1.08 (SD = 1.18).

4.1.2 Factors Affecting Road Rage

Five selected independent variables were examined whether they have an influence on road rage or aggressive driving behaviors or not. These include traffic congestion (TC), hot weather (HW), poor road condition (RC), anonymity of other drivers (ANNO), and age (AGE).

Table 6 Mean and standard deviation of traffic congestion (TC)

	N	Minimum	Maximum	Mean	Std. Deviation
TC1	987	1.0	5.0	4.203	1.0560
TC2	987	1.0	5.0	4.078	1.0757
TC3	987	1.0	5.0	3.991	1.1326
TC4	987	1.0	5.0	4.058	1.0975
TC5	987	1.0	5.0	4.132	1.1155
Total	987	1.00	5.00	4.0922	.98077
Valid N (listwise)	987				

Table 6 shows the mean of traffic congestion (TC) of 4.09 (SD = .98) indicating high level of traffic congestion in Bangkok. When considering each item, TC1 "the amount of cars on the road in Bangkok is large" has the highest mean (Mean = 4.20, SD = 1.06) followed by TC5 "I was tired of traffic jams on the road" (Mean = 4.13, SD = 1.12), TC2

"Car jams are common in Bangkok" (Mean = 4.09, SD = 1.08), TC4 "Traffic congestion makes it easy for people to get hot temper" (Mean = 4.06, SD = 1.10), and TC3 "Traffic congestion has frustrated you" (Mean = 3.99, SD = 1.13) respectively.

Table 7 Mean and standard deviation of hot weather (HW)

	N	Minimum	Maximum	Mean	Std. Deviation
HW1	987	1.0	5.0	3.744	1.0202
HW2	987	1.0	5.0	3.879	1.0613
HW3	987	1.0	5.0	3.864	1.1277
HW4	987	1.0	5.0	3.706	1.1353
Total	987	1.00	5.00	3.7984	.98480
Valid N (listwise)	987				

Table 7 shows the mean of hot weather (HW) of 3.80 (SD = .98) indicating high level of hot weather in Bangkok. When considering each item, HW2 "Hot weather is easy to get frustrated with" has the highest mean (Mean = 3.88, SD = 1.06) followed by HW3 "Hot weather upsets people" (Mean = 3.86, SD = 1.13), HW1 "I face hot weather everyday" (Mean = 3.74, SD = 1.02), and HW4 "Hot weather causes road users get into trouble easily" (Mean = 3.71, SD = 1.14) respectively.

Table 8 Mean and standard deviation of poor road condition (RC)

	N	Minimum	Maximum	Mean	Std. Deviation
RC1	987	1.0	5.0	3.561	1.1452
RC2	987	1.0	5.0	3.590	1.1335
RC3	987	1.0	5.0	3.455	1.1970
RC4	987	1.0	5.0	3.863	1.1449
RC5	987	1.0	5.0	3.705	1.1689
Total	987	1.00	5.00	3.6349	1.02702
Valid N (listwise)	987				

Table 8 shows the mean of poor road condition (RC) of 3.63 (SD = 1.03) indicating high level of poor road condition in Bangkok. When considering each item, RC4 "Bottleneck road conditions make road users to fight each other to get into the lane" has the highest mean (Mean = 3.86, SD = 1.14) followed by RC5 "The road conditions are unsafe, causing accidents and bringing road users into a fight" (Mean = 3.71, SD = 1.17), RC2 "Road structure design is impropriety" (Mean = 3.59, SD = 1.13), RC1 "Streets of Bangkok is poor and rough conditions" (Mean = 3.56, SD = 1.15), and RC3 "Condition of the road contribute to road users arguing" (Mean = 3.46, SD = 1.20) respectively.

Table 9 Mean and standard deviation of anonymity of other drivers (ANNO)

	N	Minimum	Maximum	Mean	Std. Deviation
ANNO1	987	1.0	5.0	3.457	1.1731
ANNO2	987	1.0	5.0	3.492	1.1307
ANNO3	987	1.0	5.0	3.722	1.1367
ANNO4	987	1.0	5.0	3.658	1.1395
ANNO5	987	1.0	5.0	3.368	1.1939
Total	987	1.00	5.00	3.5394	1.00769
Valid N (listwise)	987				

Table 9 shows the mean of anonymity of other drivers (ANNO) (Mean = 3.54, SD = 1.03) indicating high level of anonymity of other drivers (ANNO) among respondents. When considering each item, ANNO3 “On the road, you do not know if the person in the other car” has the highest mean (Mean = 3.72, SD = 1.14) followed by ANNO4 “The fact that other cars don't have a symbol or identity of the person makes you not know who that person is” (Mean = 3.66, SD = 1.14), ANNO2 “On the road, you do not know if the person in the other car is old or young” (Mean = 3.49, SD = 1.13), ANNO1 “On the road, you do not know if the person in the other car is a woman or a man” (Mean = 3.46, SD = 1.17), and ANNO5 “Not knowing who the other driver is makes it more likely that there will be problems of driving dispute” (Mean = 3.37, SD = 1.19) respectively.

Table 10 Mean and standard deviation of road rage (RR)

	N	Minimum	Maximum	Mean	Std. Deviation
RR1	987	1.0	5.0	1.865	1.2615
RR2	987	1.0	5.0	1.816	1.1909
RR3	987	1.0	5.0	2.136	1.2928
RR4	987	1.0	5.0	1.988	1.2317
RR5	987	1.0	5.0	1.998	1.2301
RR6	987	1.0	5.0	1.878	1.2249
RR7	987	1.0	5.0	1.912	1.2082
RR8	987	1.0	5.0	2.265	1.2516
Total	987	1.00	5.00	1.9823	1.12061
Valid N (listwise)	987				

Table 10 shows the mean of road rage (RR) representing by aggressive driving behaviors (Mean = 3.54, SD = 1.03) indicating low level of road rage (RR) among respondents. When considering each item, RR8 “Drive faster than speed limit” has the highest mean (Mean = 2.27, SD = 1.25) followed by RR3 “Honk” (Mean = 2.14, SD = 1.29), RR5 “Speed up when car tries to overtake me” (Mean = 2.00, SD = 1.23), RR4 “Force merge into traffic” (Mean = 1.99, SD = 1.23), RR7 “Flash my high beams at slower traffic” (Mean = 1.91, SD = 1.21), RR6 “Follow car closely to prevent another merging” (Mean = 1.88, SD = 1.22), RR1 “Tap

brakes when car follows too closely" (Mean = 1.87, Sd = 1.26), and RR2 "Make rude gestures" (Mean = 1.82, SD = 1.19) respectively.

The author conducted multiple regression to test the relationship between the independents and independent variables. The findings are followings.

Table 11 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.301[a]	.090	.086	1.07152

a. Predictors: (Constant), AGE, RC, ANNO, HW, TC

Table 12 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	111.853	5	22.371	19.484	.000[b]
	Residual	1126.337	981	1.148		
	Total	1238.190	986			

a. Dependent Variable: RR

b. Predictors: (Constant), AGE, RC, ANNO, HW, TC

Table 13 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.514	.180		8.401	.000
	TC	-.269	.057	-.235	-4.693	.000
	HW	.116	.056	.102	2.072	.039
	RC	.176	.045	.161	3.930	.000
	ANNO	.253	.044	.227	5.802	.000
	AGE	-.013	.003	-.124	-4.018	.000

a. Dependent Variable: RR

Multiple regression analysis was used to test if the traffic congestion (TC), hot weather (HW), poor road condition (RC), anonymity of other drivers (ANNO), and age (AGE) predicted road rage (RR). The results of the regression indicated the five predictors explained 9.00% of the variance (R^2 = .090, F(5,981) = 19.484, p<.001). It was found that traffic congestion (TC) (β = -.24, p<.001), hot weather (HW) (β = .10, p<.05), poor road condition (RC) (β = .16, p<.001), anonymity of other drivers (ANNO) (β = .23, p<.001), predicted road rage (RR) as did age (AGE) (β = -.12, p<.001).

4.1.3 Impacts of Road Rage

This part examine relationship between (1) road rage (RR) and victimization of road rage (VICTIM) (2) road rage (RR) and perpetrator (PERPET) and (3) road rage (RR) and road traffic accident (ACC) as followings.

4.1.3.1 Road rage (RR) and victimization of road rage (VICTIM)

Simple regression analysis was conducted to test the relationship between road rage (RR) and victimization of road rage (VICTIM) as followings.

Table 14 Model summary of road rage and victimization

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.802[a]	.643	.643	.59350

a. Predictors: (Constant), RR

Table 15 ANOVA of road rage and victimization

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	625.061	1	625.061	1774.501	.000[b]
	Residual	346.962	985	.352		
	Total	972.023	986			

a. Dependent Variable: VICTIM

b. Predictors: (Constant), RR

Table 16 Coefficients of road rage and victimization

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.578	.038		15.057	.000
	RR	.711	.017	.802	42.125	.000

a. Dependent Variable: VICTIM

Simple regression analysis was used to test if road rage (RR) predicted victimization of road rage (VICTIM). The results of the regression indicated road rage (RR) explained 64.30% of the variance (R^2 = .643, F(1,985) = 1774.501, p<.001). It was found that road rage (RR) predicted victimization of road rage (VICTIM) (β = .802, p<.001).

4.1.3.2 Road rage (RR) and perpetrator (PERPET)

Simple regression analysis was conducted to test the relationship between road rage (RR) and perpetrator (PERPET) as followings.

Table 17 Model summary of road rage and perpetrator

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.707[a]	.500	.499	.66765

a. Predictors: (Constant), RR

Table 18 ANOVA of road rage and perpetrator

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	438.709	1	438.709	984.194	.000[b]
	Residual	439.068	985	.446		
	Total	877.777	986			

a. Dependent Variable: PERPET

b. Predictors: (Constant), RR

Table 19 Coefficients of road rage and perpetrator

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.411	.043		9.524	.000
	RR	.595	.019	.707	31.372	.000

a. Dependent Variable: PERPET

Simple regression analysis was used to test if road rage (RR) predicted perpetrator (PERPET) of road rage. The results of the regression indicated road rage (RR) explained 50.00% of the variance (R^2 = .500, F(1,985) = 984.194, p<.001). It was found that road rage (RR) predicted perpetrator (PERPET) of road rage (β = .707, p<.001).

4.1.3.3 Road rage (RR) and road traffic accident (ACC)

Simple regression analysis was conducted to test the relationship between road rage (RR) and road traffic accident (ACC) as followings.

Table 20 Model summary of road rage and road traffic accident

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.109[a]	.012	.011	1.1783

a. Predictors: (Constant), RR

Table 21 ANOVA of road rage and road traffic accident

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.316	1	16.316	11.752	.001[b]
	Residual	1367.520	985	1.388		
	Total	1383.836	986			

a. Dependent Variable: ACC

b. Predictors: (Constant), RR

Table 22 Coefficients of road rage and road traffic accident

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.851	.076		11.168	.000
	RR	.115	.033	.109	3.428	.001

a. Dependent Variable: ACC

Simple regression analysis was used to test if road rage (RR) predicted road traffic accident (ACC). The results of the regression indicated road rage (RR) explained 1.20% of the variance (R^2 = .012, F(1,985) = 11.752, p<.001). It was found that road rage (RR) predicted road traffic accident (ACC) (β = .109, p=.001).

4.2 Qualitative Research Results

4.2.1 Causes of Road Rage

The authors conducted in-depth interviews with 20 key informants and found additional causes of road rage as followings.

(1) Dissatisfactions of another road users
(2) Illegal driving people infringe on other people rights
(3) Ability to control emotions
(4) Personal habits
(5) Hustle
(6) Nurturing
(7) Not knowing forgiveness when an incident occurs
(8) Failure to maintain traffic rules

4.2.2 Impacts of Road Rage

According to the in-depth interview, the key informants suggested some impacts of road rage as followings.

(1) Individual impacts
(2) Accidents

(3) Traffic congestion
(4) Waste of money and time
(5) A social defendant.
(6) A bad role model for young generation.
(7) Embarrassment to the family

4.2.3 Measures Against Road Rage

The key informants suggested certain measures against road rage as followings.

(1) Public relations on fine and penalty in accordance with traffic law and criminal code. Most people perceive that they will be fine only 500THB. In fact, whoever argues in public shall be fined not exceeding 5,000 Baht according to Article 372 of the Criminal Code.

According to Article 391 of the Criminal Code, anyone who uses force to harm another person without causing physical or mental harm. He faces up to 1 month in prison or a fine of up to 10,000 baht or both.

Article 295 of the Criminal Code, whoever hurts others, causes harm to the body or mind of others. Those who commit assaults are punishable by up to 2 years in prison or a fine of up to 40,000 baht or both.

According to Article 297 of the Criminal Code, whoever, commits bodily harm, and thereby causing the victim to receive grievous bodily harm, shall be punished with imprisonment of six months to ten years.

(2) Change Mindset: Acknowledge road users to understand that driving does not exercise of individual's privacy rights. It is a state privilege allowing a suitable person to drive.
(3) Training on traffic law and rules for using a road vehicle.
(4) Putting road traffic safety, traffic rules, and safety driving into curriculum for children. This can be Ministry of Education.
(5) Training on mediation/compromise techniques should be provided for aggressive road users.
(6) Anger management to drivers and riders.

CHAPTER 5 CONCLUSION

This project main objectives are to examine causes of road rage, impacts of road rage, legal measures against road rage, relationship between road rage and road traffic accident, and to provide suggestions and recommendations to policy makers. The empirical data were collected using questionnaire and in-depth interview. The collected data from 987 respondents were analyzed using descriptive statistics such as frequency, percentage, mean, med wasian, and standard deviation (SD). In addition, multiple regression analysis was employed to examine relationship between independent and dependent variables. Narrative analysis was employed to analyze data obtained from 20 key informants. This method is used to analyze content from various sources, such as interviews of respondents, observations from the field, or surveys. It focuses on using the stories and experiences shared by people to answer the research questions.

5.1 Participants

There were 563 male accounting for 57.04%. The majority obtained bachelor's degree (57.24%). Most respondents were single (76.80%) and around 47.82 working as government officials. Their average income was around 10,001 – 15,000 Baht/month (31.21%). The minimum and maximum age of the respondent is 17 and 65 years old in that order, with the average of 30 years old. Their family sizes are ranging from 1 to 10 with the average of 4 members per family. The average of experience in road traffic accident during the past three years is 1.08.

5.2 Factors Affecting Road Rage

The findings indicate that there are several factors leading to road rage, which are traffic congestion, hot weather, poor road condition, anonymity of other drivers and road users' age. Other causes of road rage are also be suggested such as dissatisfactions of another road users, illegal driving people infringe on other people rights, ability to control emotions, personal habits, hustle, nurturing, not knowing forgiveness when an incident occurs, and failure to maintain traffic rules.

5.3 Impacts of Road Rage

According to the results of this study, road rage can result in victimization of road rage, perpetrator of road rage, and road traffic accident. Moreover, it also has several impacts such as individual impacts, traffic congestion, waste of money and time, social defendant, a bad role model for young generation, and embarrassment to the family.

5.4 Countermeasures Against Road Rage

To cope with this problem, public relations on fine and penalty in accordance with traffic law and criminal code should be administered countrywide, changing mindset of road users to understand that driving does not exercise of individual's privacy rights, training on traffic law and rules for using a road vehicle should be promoted, putting road traffic safety, traffic rules, and safety driving into curriculum for children, training on mediation/compromise techniques should be provided for aggressive road users, as well as anger management course.

5.5 Recommendations

5.5.1 Recommendation for Policy Makers

(1) This issue should be put in the national agenda.

(2) Public relations should be considered to change mindset of road users

(3) Some parts of the Road Traffic Act should be amended.

(4) Rigid, fair, and justice law enforcement.

(5) Education on road rage issue should be promoted.

(6) Anger management course should be administered for all road users prior obtaining driving license.

5.5.2 Recommendation for Future Research

(1) There should be empirical data collection of traffic accidents related to road rage [Database]. Then, analyze and utilize the data properly.

(2) Driver internal factors, driving manner, human psychology, social factors, economic factors, and political factors should be added in future study.

(3) There should be a comparative study between commercial vehicle drivers and personal car drivers.

References

Bujang, M.A., Sa'at, N., & Sidik, T.M.I.T.A.B. (2017). Determination of minimum sample size requirement for multiple linear regression and analysis of covariance based on experimental and non-experimental studies. Epidemiology Biostatistics and Public Health, 14(3), e12117-1 - e12117-9.

Dula, C.S., & Geller, E.S. (2003). Risky, aggressive, or emotional driving: Addressing the need for consistent communication in research. Journal of Safety Research, 34, 559–566.

Ellison, P.A., Govern, J.M., Petri, H.L., & Figler, H.H. (1995). Anonymity and aggressive driving behavior: A field study. Journal of Social Behavior and Personality, 10, 265–272.

Galovski, T.E., & Blanchard, E.B. (2004). Road rage: A domain for psychological intervention. Aggression and Violent Behaviour, 9, 105–127.

Gliem, J.A., & Gliem, R.R. (2003, October 8-10). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Paper presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education, The Ohio State University, Columbus, OH. Retrieved June 8, 2012, from https://scholarworks.iupui.edu/bitstream/handle/1805/344/Gliem+&+Gliem.pdf?sequence=1

Kotchapong, T. (2008). The effect of social entrepreneur characteristics, principles of good governance and fair trade principles on social enterprise performance of the Thaicraft fair trade producer groups. (Unpublished master thesis). University of the Thai Chamber of Commerce, Bangkok.

Ministry of Land Transport. (2020). Thailand road safety report 2015-2019. Retrieved 2 February 2021 from https://stat.mot.go.th/index.php/road

National Statistical Office. (2014). Road traffic accident statistics. Retrieved 3 February 2021 from http://www.nso.go.th/sites/2014/Pages

Prasitrattasin, S. (2007). Social science research methodology (14th ed.). Bangkok, Samlada. [In Thai]

Sharkin, B. (2004). Road rage: Risk factors, assessment, and intervention strategies. Journal of Counseling and Development, 82, 191–198.

Shinar, D. (1998). Aggressive driving: The contribution of the drivers and the situation. Transportation Research Part F, 1, 137–160.

Smart, R.G., Stoduto, G., Mann, R.E., & Adlaf, E.M. (2004). Road rage experience and behavior: Vehicle, exposure, and driver factors. Traffic and Injury Prevention, 5, 343–348.

Stephens, N., & Ohtsuka, K. (2014). Cognitive biases in aggressive drivers: Does illusion of control drive us off the road? Personality and Individual Differences 68, 124-129. Retrieved 3 February 2021 from http://isiarticles.com /bundles/ Article/pre/pdf/77516.pdf

Tasca, L. (2000). A review of literature on aggressive driving research. Paper presented at Conference on Aggressive Driv- ing Issues, Ontario, Canada. Retrieved from http://www. aggressive.drivers.com/ board/messages/25/49.html

Wells-Parker, E., Ceminsky, J., Hallberg, V., Snow, R.W., Dunaway, G., Guiling, S. … Anderson, B. (2002). An exploratory study of the relationship between road rage and crash experience in a representative sample of US drivers. Accident: Analysis & Prevention, 34, 271–278.

World Health Organization. (2018). Global status report on road safety 2018. Geneva: World Health Organization.

Appendix

Questionnaire
Research project "Road Rage: Causes, Impacts, Legal Measures, and Road Traffic Accidents "

Part 1 Demographic Information

1. Gender ☐ Male ☐ Female
2. Age……years old.
3. Education
   - ☐ Secondary school or lower
   - ☐ High school/Vocational College
   - ☐ High Vocational College
   - ☐ University
4. Marital Status
   - ☐ Single
   - ☐ Married
   - ☐ Divorced
   - ☐ Separated
   - ☐ Other (please specify……)
5. Occupation
   - ☐ Government official
   - ☐ Government enterprise employee
   - ☐ Employee
   - ☐ Businessman/Businesswoman
   - ☐ Farmer/Laborer
   - ☐ Other (please specify……)
6. Income
   - ☐ Less than 5,000 Baht/month
   - ☐ 5,000 - 10,000 Baht//month
   - ☐ 10,001 – 15,000 Baht/month
   - ☐ 15,001 – 20,000 Baht/month
   - ☐ 20,001 – 25,000 Baht/month
   - ☐ 25,000 or over
7. Household size (No. of family member)…….persons.
8. Experience of traffic accident (last 3 years)
   - ☐ None
   - ☐ Once
   - ☐ Twice
   - ☐ 3 times
   - ☐ 4 times
   - ☐ 5 times
   - ☐ More than 5 times

For Part 2-9; The levels of agreement are as followings:

5 = Strongly Agree
4 = Agree
3 = Undecided
2 = Disagree
1 = Strongly Disagree

Part 2 Traffic Congestion

Item	Level of agreement				
	5	4	3	2	1
1. The amount of cars on the road in Bangkok is large					
2. Car jams are common in Bangkok					
3. Traffic congestion has frustrated you					
4. Traffic congestion makes it easy for people to get hot temper					
5. I was tired of traffic jams on the road					

Part 3 High Temperature

Item	Level of agreement				
	5	4	3	2	1
1. I face hot weather everyday					
2. Hot weather is easy to get frustrated with					
3. Hot weather upsets people					
4. Hot weather causes road users get into trouble easily					

Part 4 Poor Road Condition

Item	Level of agreement				
	5	4	3	2	1
1. Streets of Bangkok is poor and rough conditions					
2. Road structure design is impropriety.					
3. Condition of the road contribute to road users arguing					
4. Bottleneck road conditions make road users to fight each other to get into the lane					
5. The road conditions are unsafe, causing accidents and bringing road users into a fight					

Part 5 Anonymity of Other Drivers

Item	Level of agreement				
	5	4	3	2	1
1. On the road, you do not know if the person in the other car is a woman or a man					
2. On the road, you do not know if the person in the other car is old or young					
3. On the road, you do not know if the person in the other car					
4. The fact that other cars don't have a symbol or identity of the person makes you not know who that person is					
5. Not knowing who the other driver is makes it more likely that there will be problems of driving dispute					

Part 6 Aggressive Driving Behaviors

Item	Level of agreement				
	5	4	3	2	1
1. Tap brakes when car follows too closely					
2. Make rude gestures					
3. Honk					
4. Force merge into traffic					
5. Speed up when car tries to overtake me					
6. Follow car closely to prevent another merging					
7. Flash my high beams at slower traffic					
Speeding Subscale					
8. Follow slower car at less than car length					
9. Drive faster than speed limit					
10. Pass in front of a car at less than a car length					

Part 7 Victimization of Road Rage

1 Never → 5 Very often

Item	Level of agreement				
	5	4	3	2	1
Intimidating behaviors (VRR)					
1. Another driver prevent you from entering lane from anger					
2. Another driver deliberately prevent you from passing					
3. Another driver tailgate you to force you to move over					
4. Another driver try to cut your car off the road					
5. Another driver follow/chase you with anger					
Experience of road rage (VRR)					
1. Another driver get out of car to argue with you					
2. Another driver show signs of assault					
3. Another driver get out of car to hurt you					
4. Another driver deliberately collide with or damage your car					
5. Another driver point a gun or shoot at your car					

Part 8 Perpetrator of Road Rage

1 Never → 5 Very often

Item	Level of agreement				
	5	4	3	2	1
Intimidating behaviors (PRR)					
1. Prevent someone from entering lane from anger					
2. Deliberately prevent another driver from passing					
3. Tailgate others to force them to move over					
4. Try to cut another car off the road					
5. Follow/chase another driver with anger					
Experience of rage (PRR)					
1. Get out of car to argue with another driver					
2. Think about physically hurting another driver					
3. Get out of car to hurt another driver					
4. deliberately collide with or damage another car					
5. Point a gun or shoot at another car					

Final Report

Research Grant 2021

ATRANS