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IMPROVEMENT ON VEHICLE SAFETY DRIVING OF SENIOR PEOPLE BY SAFETY EDUCATION PROMOTION

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Funding : ATRANS& IATSS

ABSTRACT

Quasi experimental research, quantitative data, aimed to study the improvement of vehicle safety driving of senior people by safety Education promotion among Senior People, in Municipality ,Khon kaen, Thailand.

The participants were senior people both female and male > 60 yrs 200 persons. Intervention by improvement on vehicle safety driving by using sticker line package and handbook including give information and discussion. Data were collected by questionnaire for pre and post test. Data analysis by using SPSS program for quantitative data. The results showed that the knowledge of car safety driving ,attitude toward car driving, belief of reference group , self control, , and intention for safety driving and practice of car driving after implementation higher that before experimental and were in high level, in additional satisfaction of both sticker line and handbook in high level.

Therefore the program of improvement of vehicle safety driving of senior people by safety Education promotion among Senior People is good intervention and should extent to other area for safety driving among senior people.

Keywords: Improvement, vehicle safety driving, senior people, safety Education promotion

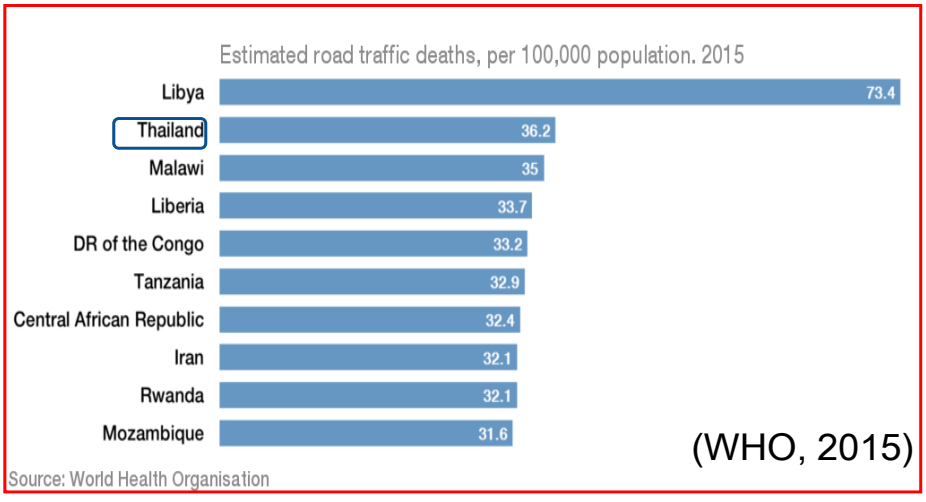
CHAPTER I INTRODUCTION

1.1 Rationale

Traffic accident is world wide problem, the total number of road traffic deaths has plateaued at 1.25 million per year, with the highest road traffic fatality rates (90%)are in medium to low income countries . Over 3,700 people die on the world's roads every day and tens of millions of people are injured or disabled every year. Children, pedestrians, cyclists and older people are among the most vulnerable of road users. WHO works with partners - governmental and nongovernmental - around the world to raise the profile of the preventability of road traffic injuries and promote good practice related to addressing key behavior risk factors – speed, drink-driving, the use of motorcycle helmets, seat-belts and child restraints. (WHO, https://www.who.int/violence_injury_prevention/road_traffic/en/,2019) Southeast Asia would be predicted most serious of traffic accident problem in the year 2020.

Accident situation in South East Asia in 10 countries found that countries with the death rate from road accidents highest is Thailand 36.20 per one hundred thousand population, followed by Vietnam with 24.*50, Malaysia* 24 ,Myanmar 20.30 and Cambodia 17.40 (WHO, 2015).

Countries with the most road traffic deaths



(WHO, 2015)

Traffic accidents are a serious problem in Thailand in every province. Especially in Songkran and New year festival. Accident occur most in youth group, but another group are increasing also, including senior people.

Thailand had already facing to be ageing society since the year 2007. Due to has a population of approximately 7 million old age people, the elderly accounted for 10.7 percent of the entire population of Thailand. The change in the age structure of the population to access the older population is quite a short period of time when compared to many developed countries, the ratio of the population of seniors Thailand will increase from 9.3 percent in 2000 to 19.2 percent in the year 2025, which took about 22 years to increase the proportion of the elderly population to double. While most developed countries have to take about 70 years to 100 years. (Knodel J and Chayovan N, 2008). It's challenge problem have to urgently concern for preparing and problem solving in many aspects especially transportation.

The elderly also one Thailand driving even more than 60 years age, although not as much as the elderly in Europe. However, in the future there will be more elderly more driving in Thailand, because of long life and trend to self reliance in daily life. Driving is the meaningful of freedom, self reliance, So Thai ageing people still driving even more than 60 years old. However Thailand not alert of readiness evaluation for driving of ageing people. Weerasak Muangpaisal (http://www.si.mahidol.ac.th/sidoctor/e-pl/articledetail. , *2018).*

Although the number of traffic accident still high number, this major cause of death, injuries in Thailand including ageing people is high risk group due to changing of physiology. Ageing people faced traffic accident less than youth group because of slowly driving, more experience, more seat belt fasten, no drunk drive, But if ageing people high speed driving , they got accident more than youth group. Most of ageing who are 70 years old, and 80 years old much more accident than youth group 9 times. The cause of accident among ageing people were more than 85 years old, cause of seeing problem and dementia. Including lack of muscle strength, slowly response of any urgently situation, decreasing co ordination of organs, decreasing of concentration and some people have disease such as cataract, glaucoma, Parkinson, cerebrovascular disease, osteoporosis ,heart disease diabetic mellitus and hypertension, in addition aging people were effect from medicines also, some feel sleepy, dizzy, vomiting, confuse, low concentrate and bad decision making.

Chatchai promlert said that ageing people most unhealthy were risk of accident so they should be advice for effective driving as follow 1).consult Dr. for driving capacity evaluation 2).avoid driving bad atmosphere such as night, raining, smoke, 3). Avoid driving in rush hour on long distance 4). Ageing people who sickness with heart disease, dementia, Parkinson, severe diabetes mellitus and myoasthenia or muscle weakness. These are high risk of accident should stop driving. (http://www.thaihealth.or.th/,2018) It necessary to make them increase self efficacy.

It's challenge problem have to urgently concern for preparing and problem solving in many aspects especially transportation. Including Khon Kaen, locate in the Northeast of Thailand is increasing number of senior people also, senior people in the year 2016and 2018 age 60-69 was 9,518 and 9,862, meanwhile 70-79 was 5,313 and and 5,531 years old and 80-89 was 1,874 and 2002, as well as 90-99 was 176 and 322 subsequently. as shown in the table ,

Populations in Khon Kaen Municipality , divide by age in the year 2016 – 2017

Age (yr)	Population					
	2016			2017		
	Male	Female	Total	Male	Female	Total
0-9	5,879	5,471	11,350	5,634	5,196	10,830
10-19	9,006	10,140	19,146	8,143	9,079	1,7222
20-29	11,076	12,194	23,270	11,645	14,431	26,076
30-39	7,359	7,903	15,262	7,240	7,715	14,955
40-49	7,838	9,268	17,106	7,666	9,095	16,761
50-59	6,809	8,653	15,462	6,890	8,712	15,602
60-69	4,205	5,313	9,518	4,327	5,535	9,862
70-79	2,439	2,874	5,313	2,510	3,021	5,531
80-89	827	1,047	1,874	892	1,117	2,009
90-99	159	186	345	176	186	362
➢ 100	70	60	130	12	18	30

Resource : Khon Kaen Municipality, 2017

This research concern to applying the theory of planned behavior for the prediction of vehicle safety driving in elderly people. Ajzen belief that perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and these intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior. Attitudes, subjective norms, and perceived behavioral control are shown to be related to appropriate sets of salient behavioral, normative, and control beliefs about the behavior, Ajzen(1985)

Increasing safety skill for vehicle safety driving among senior people is very important by using safety education promotion including various activities as well as interesting media such as line sticker and hand book for improving vehicle safety driving among senior people.

Line is a freeware app for instant communications on electronic devices such as smart phones, tablet computers, and personal computers. **Line** users exchange texts, images, video

and audio, and conduct free conversations and video conferences. It is the most popular messaging **application** now. Especial line sticker application is very popular for sending message including picture for attraction and interaction. In this research sticker line package involve 40 frames of pictures and words compose of car driving safety about human factor, road factor, car factor and ,environment, including traffic law respect,. for senior people would be Increasing concern car safety driving behavior.

A **handbook** is a type of reference work, or other collection of instructions, that is intended to provide ready reference. The term originally applied to a small or portable book containing information useful for its owner, but the Oxford English Dictionary defines the current sense as "any book...giving information such as facts on a particular subject, guidance in some art or occupation, instructions for operating a machine, or information. So the media suitable for people who can read. Therefore handbook in this research mean book...giving information about car safety driving including safety about human factor, road factor, car factor and ,environment, including traffic law respect,. For senior people who could read and understand about car driving..

Therefore researchers concern to study the improvement on vehicle safety driving of senior people by using safety education promotion in Municipality Muang district, Khon kaen, Thailand.

RESEARCH Question

What is the effectiveness of safety education promotion program after improvement on vehicle safety driving among senior people?

RESEARCH OBJECTIVES.

1.To study effectiveness of safety education promotion program on vehicle safety driving of senior people between pre to study the improvement on vehicle safety driving of senior

people by using safety education promotion in Municipality Muang district, Khon kaen, Thailand and post test.

1.1. Knowledge on vehicle safety driving

1.2. Attitude toward vehicle safety driving

1.3 Social norm for vehicle safety driving

1.4. Self Control on vehicle safety driving

1.5. Intention to vehicle safety driving

1.6 Skill of vehicle safety driving

2. Study satisfaction of safety education promotion program

Limitation: Study 1 province namely Khon Kaen Provinces, in the Northeast of Thailand. Total of general old age people person 200 person. Both male and female who still driving.

RESEARCH BENEFITS.

1.Receive innovation both sticker line and hand book for vehicle safety driving among senior people.

2.Senior people gain knowledge, attitude, self control, intention and skill on vehicle safety driving.

3.Increasing of driving skill among senior people.

4. Decrease of traffic accident among senior people.

5. Model of safety driving for senior people.

Definition

Theory of Planned Behavior means Theories by Ajzen and Fishbien (1985) belief that perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms or reference group , and perceived behavioral self control; and intentions, together account for considerable variance in actual behavior. This research concern to applying the theory of planned behavior for the prediction of vehicle safety driving in elderly people.

Hand book means book...giving information about car safety driving including safety about human factor, road factor, car factor and ,environment, including traffic law respect,. for senior people who could read and understand about car driving..

Sticker line means freeware app for instant communications on electronic devices such as smart phones, tablet computers, and personal computers. **Line** users exchange texts, images, video and audio, and conduct free conversations and video conferences in this package of sticker line there are 40 frames of pictures and words compose of car driving safety about human factor, road factor, car factor and ,environment, including traffic law respect,. for senior people would be Increasing concern car safety driving behavior.

Improvement means change behavior better after implementation by teaching and using sticker line in addition handbook on car safety driving among senior people.

CHAPTER 2 LITERATRE REVIEW

This research specific focus on traffic accident between rural and urban area, consequently related research literature was reviewed in the following topics.

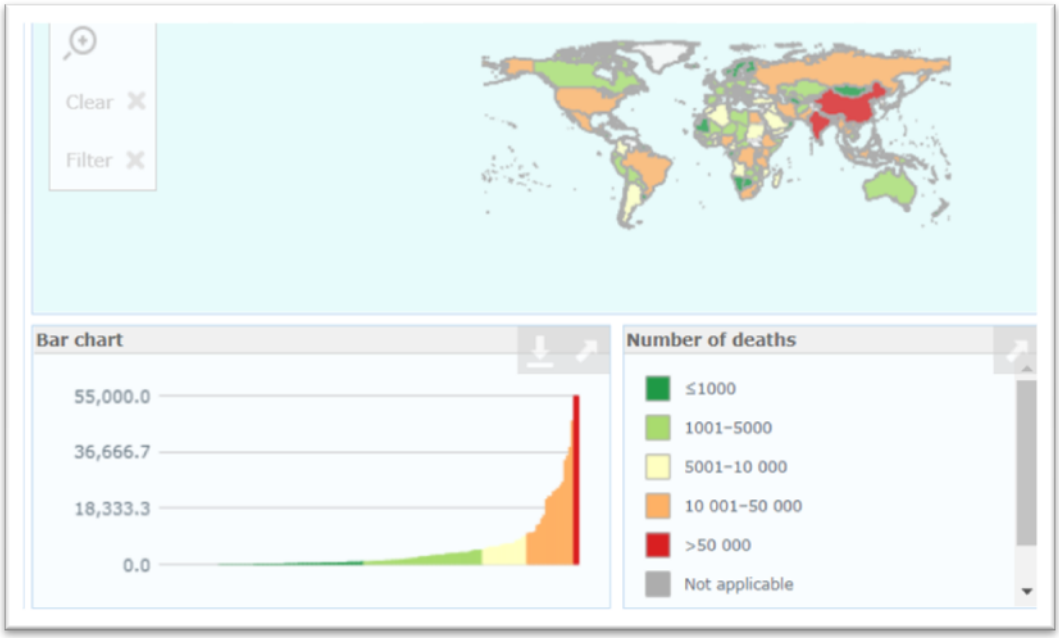
2.1 Road traffic accident situation in the world
2.2 Road traffic accident situation in Thailand
2.3 Senior people
2.4 Plan Behavior Theory.
2.5 Conceptual framework

2.1 Road traffic accident situation in the world.

1.The Global status report on road safety

The Global status report on road safety 2015, reflecting information from 180 countries, indicates that worldwide the total number of road traffic deaths has plateaued at 1.25 million per year, with the highest road traffic fatality rates in low-income countries. In the last three years, 17 countries have **aligned at least** one of their laws with best practice on seat-belts, drink–driving, speed, motorcycle helmets or child restraints. While there has been progress towards improving road safety legislation and in making vehicles safer, the report shows that the pace of change is too slow. Urgent action is needed to achieve the ambitious target for road safety reflected in the newly adopted 2030 Agenda for Sustainable Development: halving the global number of deaths and injuries from road traffic crashes by 2020. Made possible through funding from Bloomberg Philanthropies, this report is the third in the series, and provides a snapshot of the road safety situation globally, highlighting the gaps and the measures needed to best drive progress.

Figure 1 **The global number of deaths and injuries from road traffic crashes.**

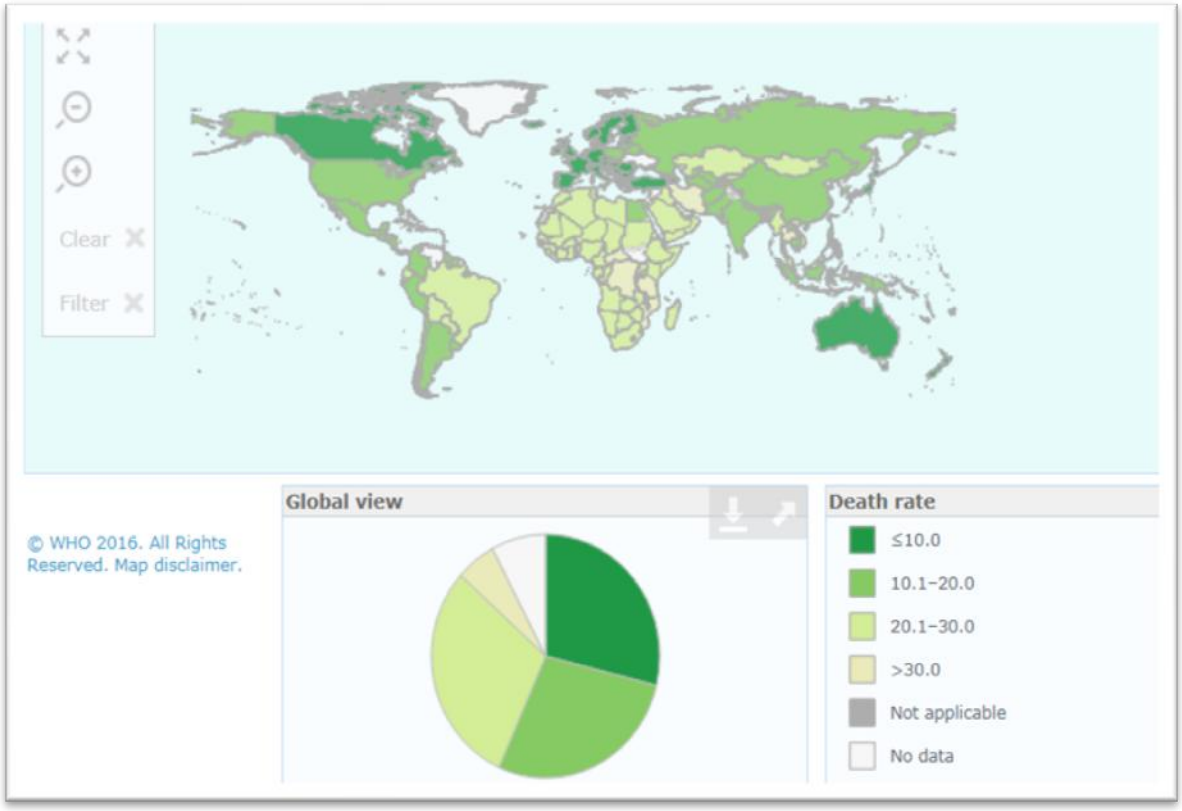


Source : http://www.who.int/violence_injury_prevention/road [1 Oct 2017]

2. The road traffic death rate by WHO region and income level

The road traffic death rate by WHO region and income level: In 2013, low- and middle-income countries had higher road traffic fatality rates per 100 000 population (24.1 and 18.4, respectively) compared to high-income countries (9.2). The African region had the highest road traffic fatality rate, at 26.6, while the European region had the lowest rate, at 9.3.

Figure 2 **The road traffic death rate by WHO region and income level**



Source : http://www.who.int/gho/road_safety/en/ . [1 Oct 2018]

More than 1.2 million die and as many as 50 million are injured every year in Road Traffic Injuries (RTIs). The overwhelming majority of these deaths occur in low and middle-income countries (LMICs) and 40% in the four BRIC countries alone. Recent trends suggest this gap is increasing. In the past fifteen years, RTIs have increased by almost 80% in Asia and by 40% in Latin America and Africa. The opposite is true in high-income countries, however, where RTI rates have been on a path of steady decline over several decades.

Beyond the enormous personal suffering they cause, RTIs weaken economic growth, place a huge strain on health care systems, and challenge development objectives. Across LMICs, losses due to RTIs are estimated at USD 100 billion/year, a figure which incorporates immediate direct costs, such as hospital care admissions, and longer term human capital costs associated with RTI victims

no longer being able to take part in economic production processes. At national level, this aggregate translates into losses of 1-3% of GDP, a figure comparable to what LMICs receive in development assistance (world Bank,2013)

On 11 May 2011, the Decade of Action for Road Safety 2011-2020 was launched in more than 100 countries, with one goal: to prevent five million road traffic deaths globally by 2020. Moving from the Global Plan for the Decade to national action, many countries have taken measures towards improving road safety, either by developing national plans for the Decade; introducing new laws; or increasing enforcement of existing legislation, among other concrete actions. The recent UN General Assembly resolution on global road safety sponsored by more than 80 countries gives further impetus to the Decade by calling on countries to implement road safety activities in each of the five pillars of the Global Plan. (world Bank,2013)

2.2 ROAD SAFETY IN THE SOUTH-EAST ASIA REGION 2015 :

The South-East Asia Region contributes 25% of the total global road traffic deaths There are approximately 316, 000 road traffic deaths each year that occur in the South-East Asia Region, accounting for approximately 25% of the world's road traffic deaths. This represents a plateau in the number of deaths, from 315, 000 in 2010 to 316 ,000 in 2013: this stabilization is positive in that it takes place in the context of increasing motorization and population growth in the region. The region's road traffic fatality rate, at 17.0 per 100, 000 population, is below the global rate of 17.4 However, there is considerable variation in fatality rates within the region, ranging from 3.5 per
100, 000 in the Maldives to **36.2 per** 100 000 population in **Thailand.** In the year 2013, low- and middle-income countries had higher road traffic fatality rates per 100 ,000 population
http://www.who.int/violence_injury_prevention/road_safety_status/2015/[9 September 2017] Thailand is the most high rate of injury in Southeast Asia

Figure 3 Rate of injury in Southeast Asia

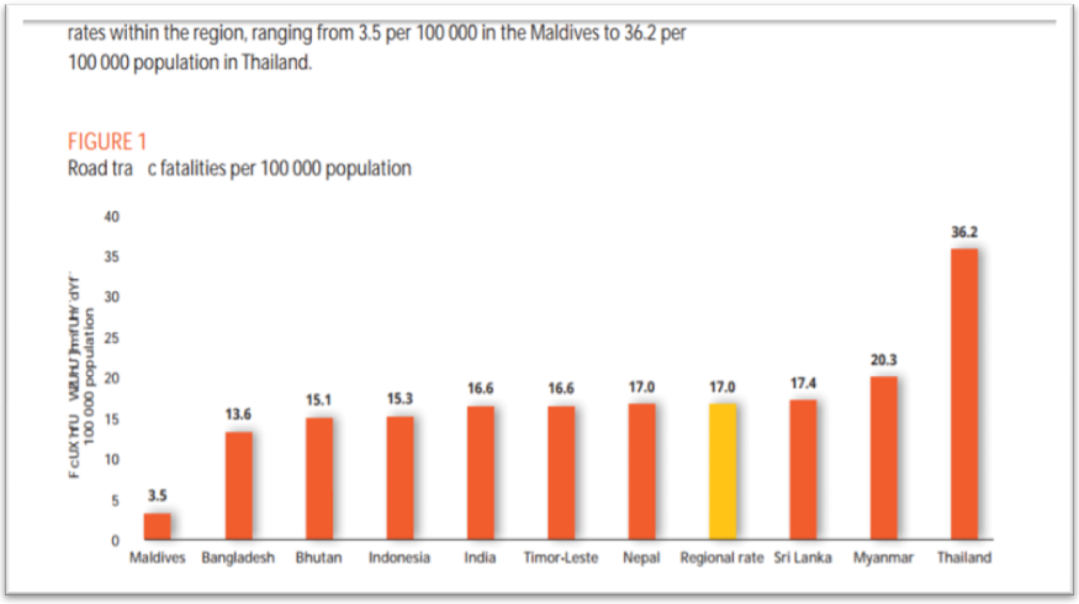
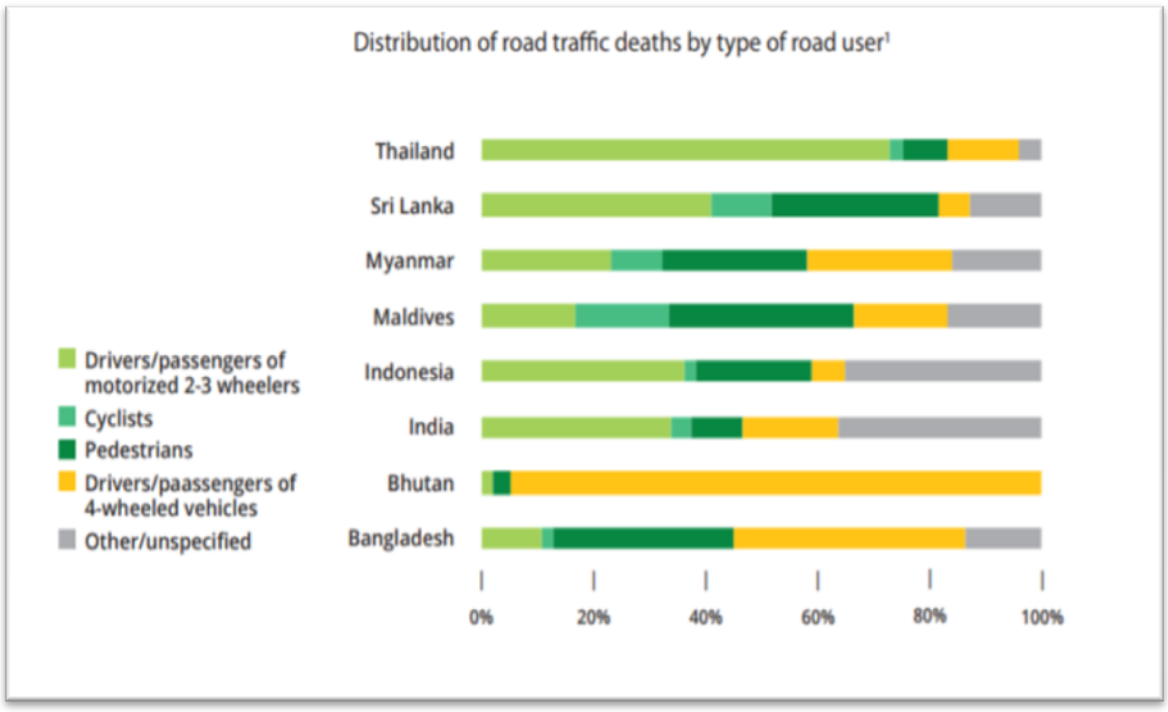


Figure 4 Road of traffic death by type of road user

Source :http://www.who.int/violence_injury_prevention/road_safety_status[9September2017]

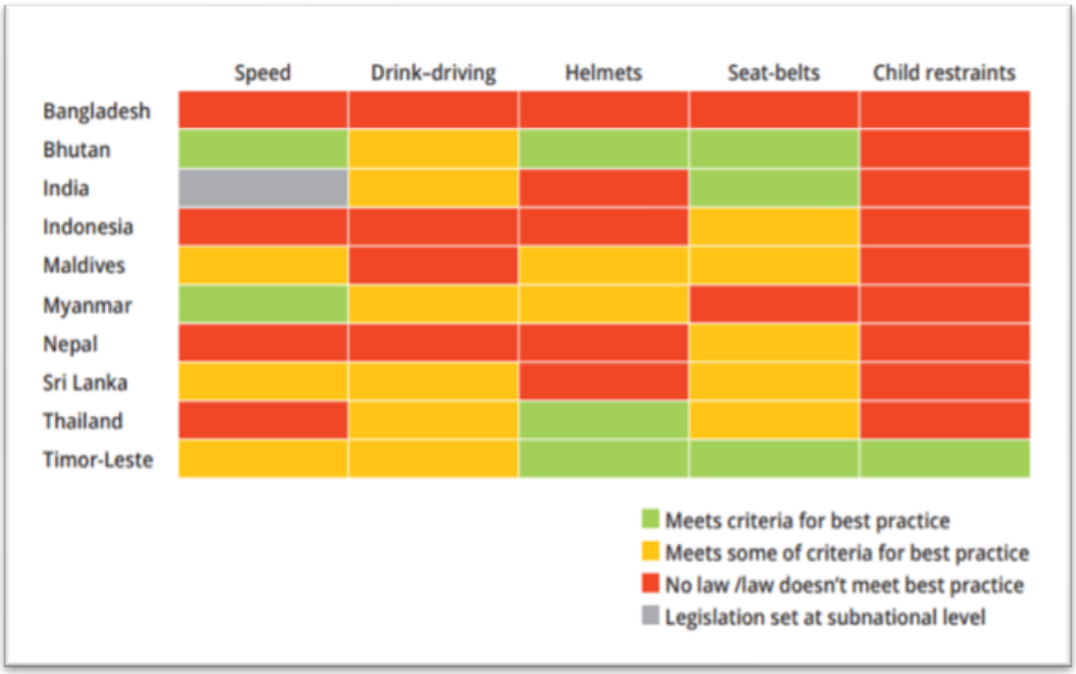


However, this regional breakdown of deaths understates the overwhelming burden of deaths among vulnerable road users in all countries except Bhutan (where car occupants are the most affected). There is also much variation in the

group most affected: in **Thailand**, for example, 83% of road deaths are among vulnerable road users (with motorcyclists comprising the bulk of these, at 73%), while in Bangladesh, the Maldives and Sri Lanka pedestrians account for approximately a third of road traffic deaths [www.who.int/violence_injury_prevention/road_safety[9September2018]

Countries need to strengthen road safety legislation Road safety laws improve road user behavior and can be an effective tool in reducing road traffic crashes, injuries and deaths. The most positive changes to road user behavior happen when road safety legislation is supported by strong and sustained enforcement, and where the public is made aware of the reasons behind the new law and the consequences of noncompliance. This section reports on an assessment of countries' current legislation to meet five key behavioral risk factors for road traffic injuries: speed, drink–driving, failure to use motorcycle helmets, seat-belts and child restraints. There is a strong evidence base showing the positive impacts that legislation on each of these risk factors can have on reducing crashes, injuries and deaths. A summary of the countries' legislation on the 5 risk factors is shown.

Figure 5 the countries' legislation on the 5 risk factors .

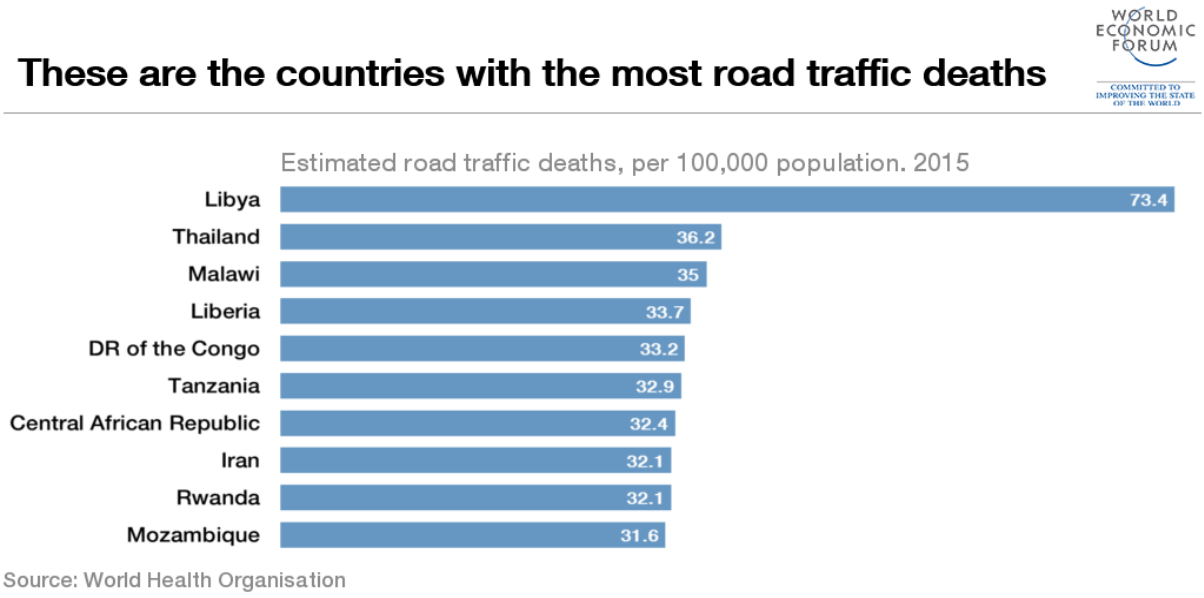


2.3 Road Traffic Accidents in Thailand.

2.3 Traffic Accident situation in Thailand

Thailand Second in the World (behind Libya) for Number of Road Accident Deaths http://www.thaiwebsites.com/caraccidents.asp [19 August 2018]

Figure 6 Countries with the most road traffic deaths.

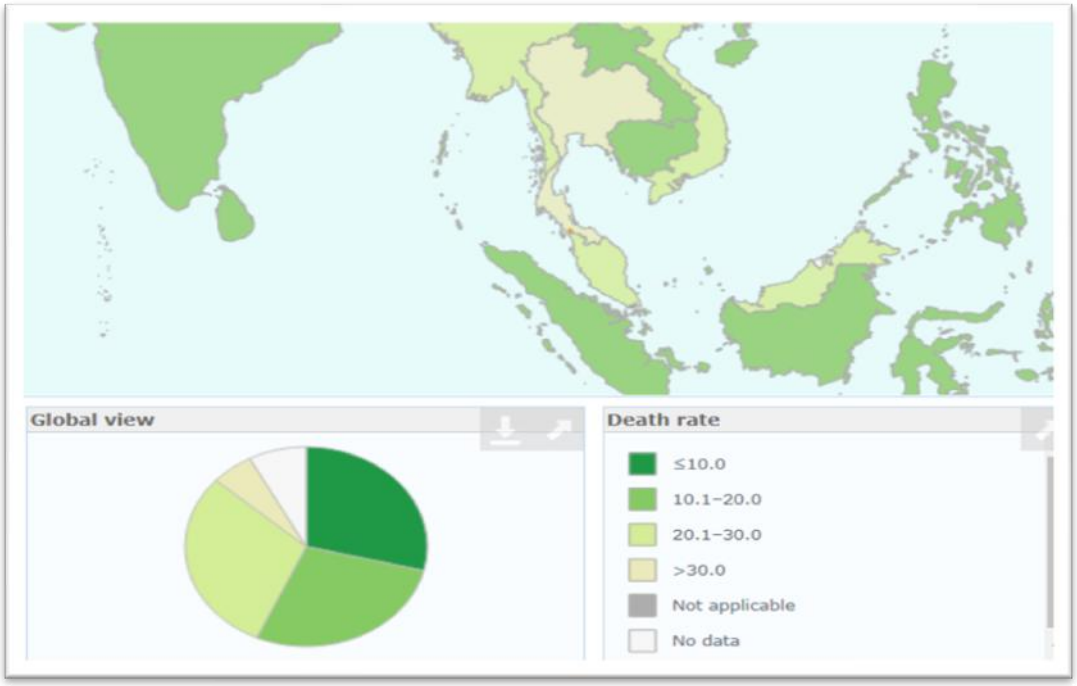


The WHO states that according to the Bureau of Policy and Strategy, Office of Permanent Secretary, Ministry of Public Health of Thailand, there were 14,059 traffic fatalities on the road in Thailand, in 2012 (latest available data). We were not able to find a direct report of these data on the website of the Ministry of Public Health.

Interesting is the number of deaths when categorized by type of road user. The amount of drivers (and passengers) killed on motorcycles (including 3-wheelers, we assume tuktuks) is simply stagering. For a large part, these road users are from the low-income category of people, and one dares to suggest that this is part of the reason not more is done to improve road safety in Thailand. Not shown on this graph : There are about as much accidents in Bangkok as in the rest of Thailand combined. However, the number of deaths and injuries is much lower.

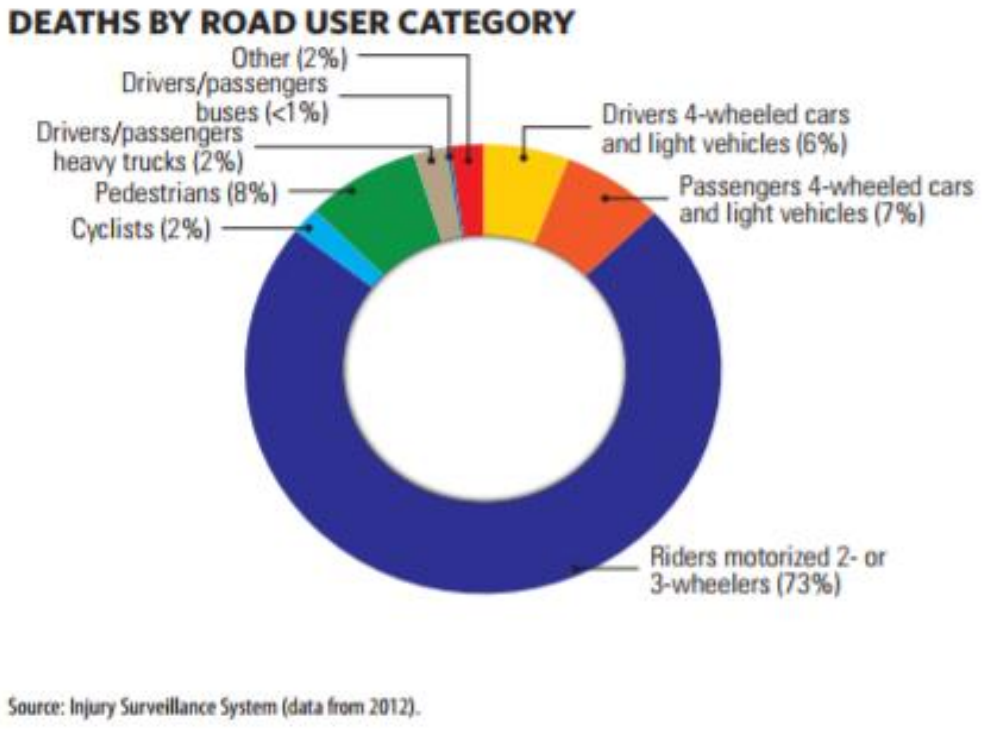
The WHO estimates the number of road traffic deaths in 2013 at 24,237 persons, or a Rate per 100,000 population for 36.2 According to this estimate, Thailand in 2013 ranks SECOND in the WORLD, after Libya, which is in the midst of what can be at least called 'civil unrest'. Though based on data from 3 years ago, this statistic is now invariably mentioned in any article in local newspapers, related to the traffic deaths issue. The number of deaths may be an estimation, but we never noticed it challenged by Thai authorities.

Figure 7 **Traffic accident in Thailand**



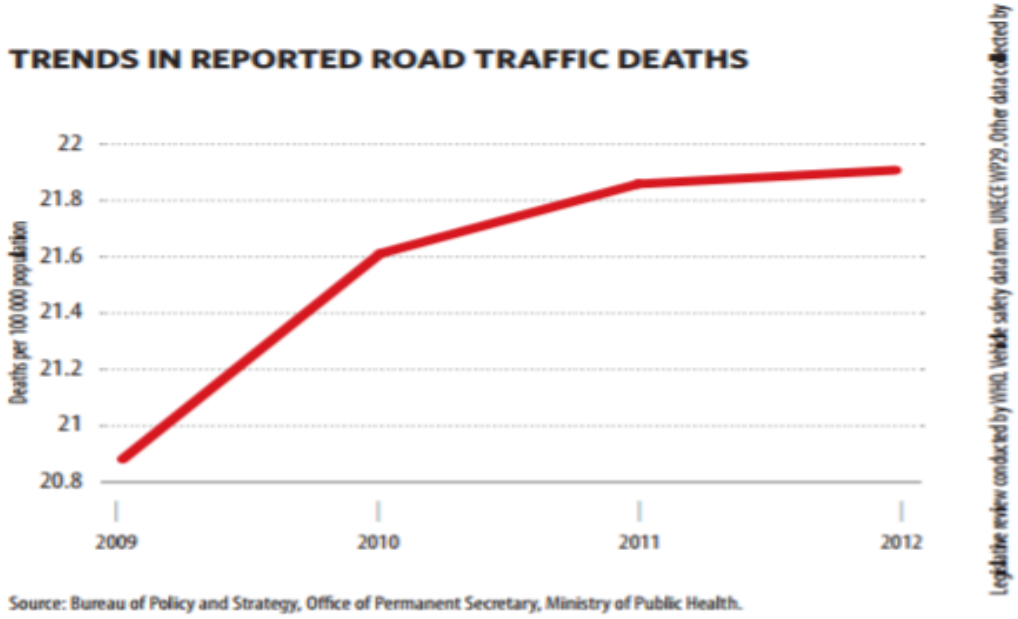
Source : http://www.who.int/gho/road_safety/mortality/ [29 September 2018]

Figure 8 Death by road user categorize



Source: :http://www.who.int/violence_injury_prevention/road_safety_status/2015/[2Sept2017]

Figure 9 Trends in reported road traffic deaths

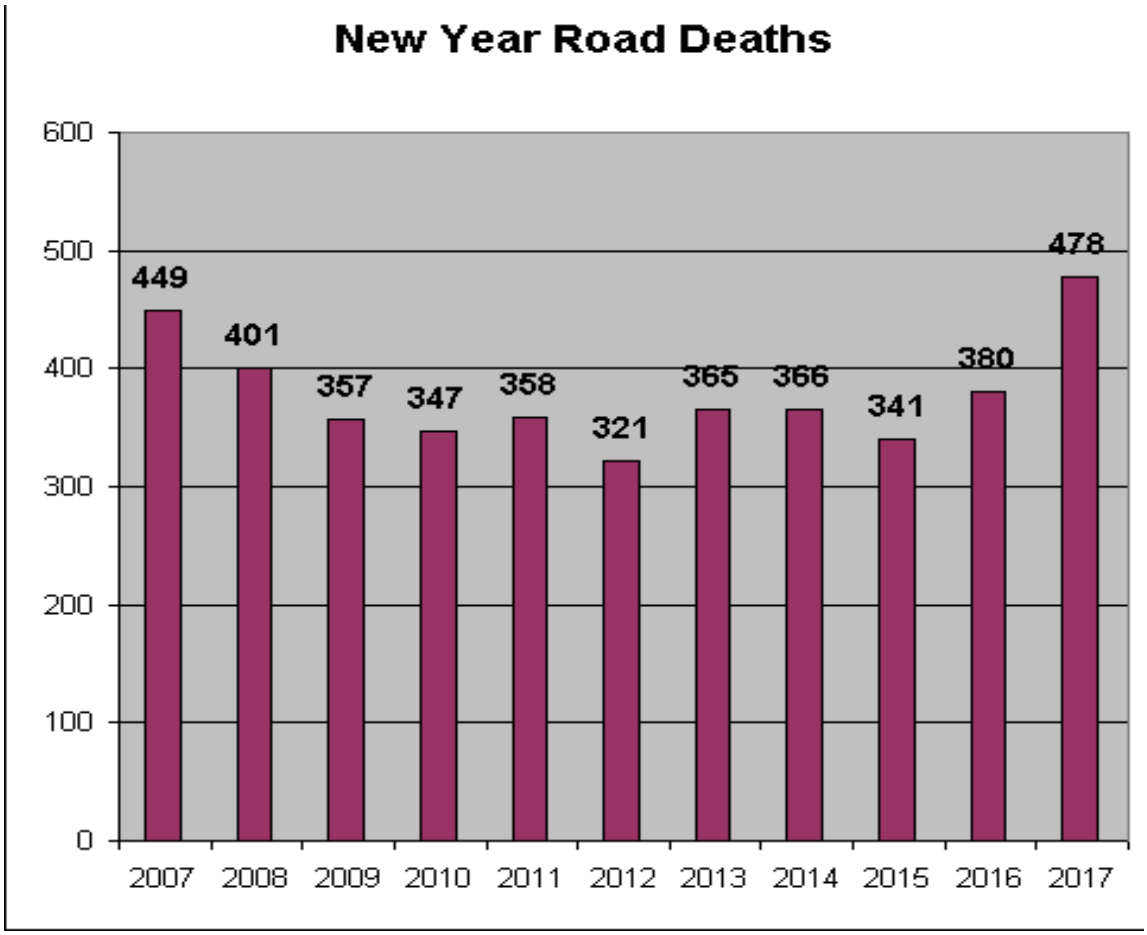


Source: :http://www.who.int/violence_injury_prevention/road_safety_status/2015/[2Sept2017]

There are two periods each year when the local media concentrate their attention towards the number of casualties on the road. They are the 'Western' New Year, and the Thai New Year (Songkran). These constitute prolonged holidays. The government always makes sure people get at least 5 days off, so they can visit their relatives (in the provinces). Since many years, daily statistics are published in the newspapers taking stock of the number of accidents and the number of deaths on the road.

This interest by the local press coincides each time with the government in charge issuing various orders, and making promises that 'this time things will be different', and the number of deaths will be lower than in the previous year. Sometimes, it looks like this promise is fulfilled, but then again, wishful thinking is prevalent, and improvements one year, are followed by disappointment the next.

Figure 10 New Year road death in Thailand



Source : http://www.thaiwebsites.com/caraccidents.asp [19 August 2018]

In the period from December 29, 2016 to January 4, 2017 : 478 people got killed by accidents on the roads of Thailand. 4,128 injuries were sustained and 3,919 reported road accidents occurred. This is the highest number of deaths since 2006. From the graph below it looks like there was some improvement between 2009 and 2015, but this year was a bit of wake-up call. In one horrendous accident between a van and a truck 25 people were killed. [so now the government plans to take vans off the road]

2.4 Senior People

The world's population is ageing: virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. According to data from World Population Prospects: the 2017

Revision, the number of older persons — those aged 60 years or over — is expected to more than double by 2050 and to more than triple by 2100, rising from 962 million globally in 2017 to 2.1 billion in 2050 and 3.1 billion in 2100. Globally, population aged 60 or over is growing faster than all younger age groups.

Globally, population aged 60 or over is growing faster than all younger age groups

In 2017, there are an estimated 962 million people aged 60 or over in the world, comprising 13 per cent of the global population. The population aged 60 or above is growing at a rate of about 3 per cent per year. Currently, Europe has the greatest percentage of population aged 60 or over (25 per cent). Rapid ageing will occur in other parts of the world as well, so that by 2050 all regions of the world except Africa will have nearly a quarter or more of their populations at ages 60 and above. The number of older persons in the world is projected to be 1.4 billion in 2030 and 2.1 billion in 2050, and could rise to 3.1 billion in 2100.

Globally, the number of persons aged 80 or over is projected to triple by 2050, from 137 million in 2017 to 425 million in 2050. By 2100 it is expected to increase to 909 million, nearly seven times its value in 2017.

Table 1 Population aged 60 years or over and aged 80 years or over for the world, Development group region and income group,2000,2015,2030,2050

	Persons aged 60 years or over (millions)				Percentage change		Distribution of older persons (percentage)			
	2000	2015	2030	2050	2000-2015	2015-2030	2000	2015	2030	2050
World	607.1	900.9	1402.4	2092.0	48.4	55.7	100.0	100.0	100.0	100.0
Development groups										
More developed regions	231.3	298.8	375.2	421.4	29.2	25.6	38.1	33.2	26.8	20.1
Less developed regions	375.7	602.1	1027.2	1670.5	60.3	70.6	61.9	66.8	73.2	79.9
Other less developed countries	341.9	550.1	938.7	1484.9	60.9	70.6	56.3	61.1	66.9	71.0
Least developed countries	33.9	52.1	88.5	185.6	53.8	70.0	5.6	5.8	6.3	8.9
Regions										
Africa	42.4	64.4	105.4	220.3	51.9	63.5	7.0	7.2	7.5	10.5
Asia	319.5	508.0	844.5	1293.7	59.0	66.3	52.6	56.4	60.2	61.8
Europe	147.3	176.5	217.2	242.0	19.8	23.1	24.3	19.6	15.5	11.6
Latin America and the Caribbean	42.7	70.9	121.0	200.0	66.1	70.6	7.0	7.9	8.6	9.6
Oceania	4.1	6.5	9.6	13.2	56.2	47.4	0.7	0.7	0.7	0.6
Northern America	51.0	74.6	104.8	122.7	46.4	40.5	8.4	8.3	7.5	5.9
Income groups										
High-income countries	230.8	309.7	408.9	483.1	34.2	32.0	38.0	34.4	29.2	23.1
Upper-middle-income countries	195.2	320.2	544.9	800.6	64.0	70.2	32.1	35.5	38.9	38.3
Lower-middle-income countries	159.7	237.5	393.9	692.5	48.8	65.9	26.3	26.4	28.1	33.1

Figure 11 Population aged 60 and over and aged 80 and over by region

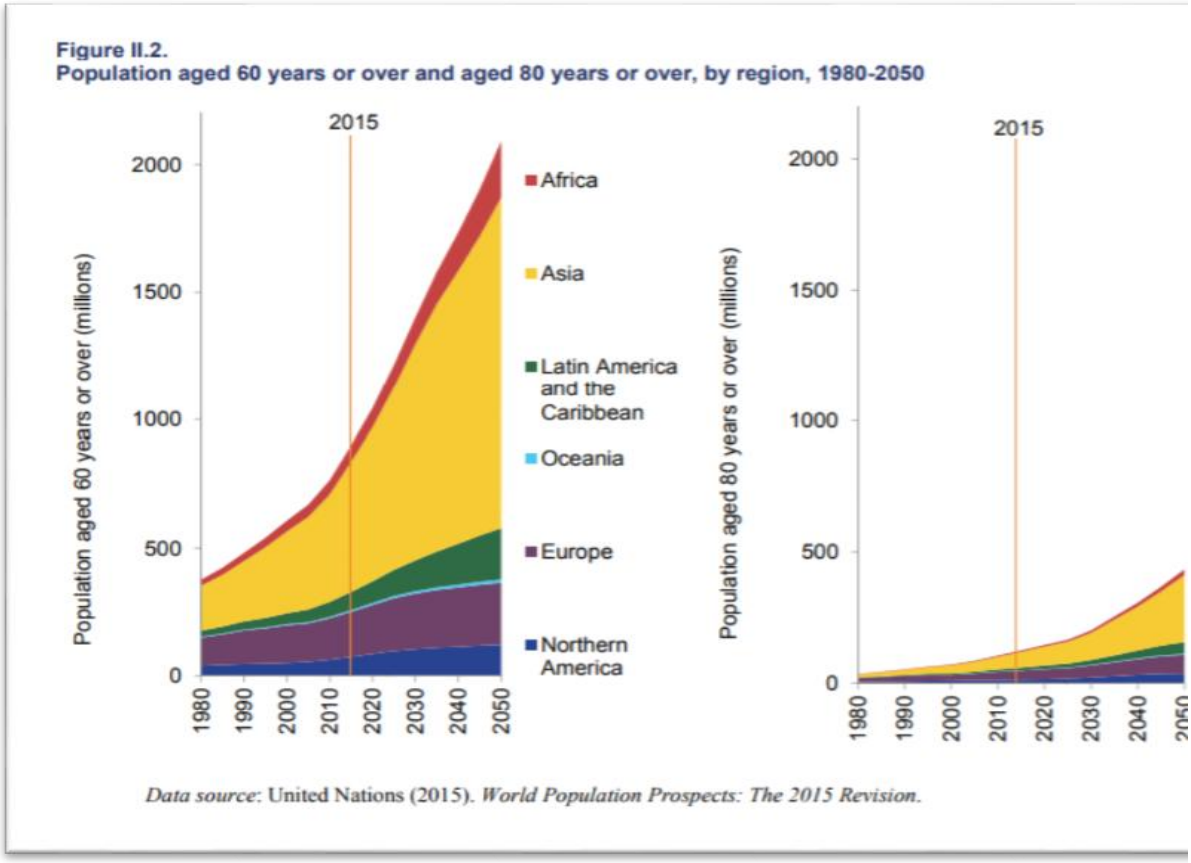


Figure 12 Population aged 60-79 and aged 80 and over by income group.

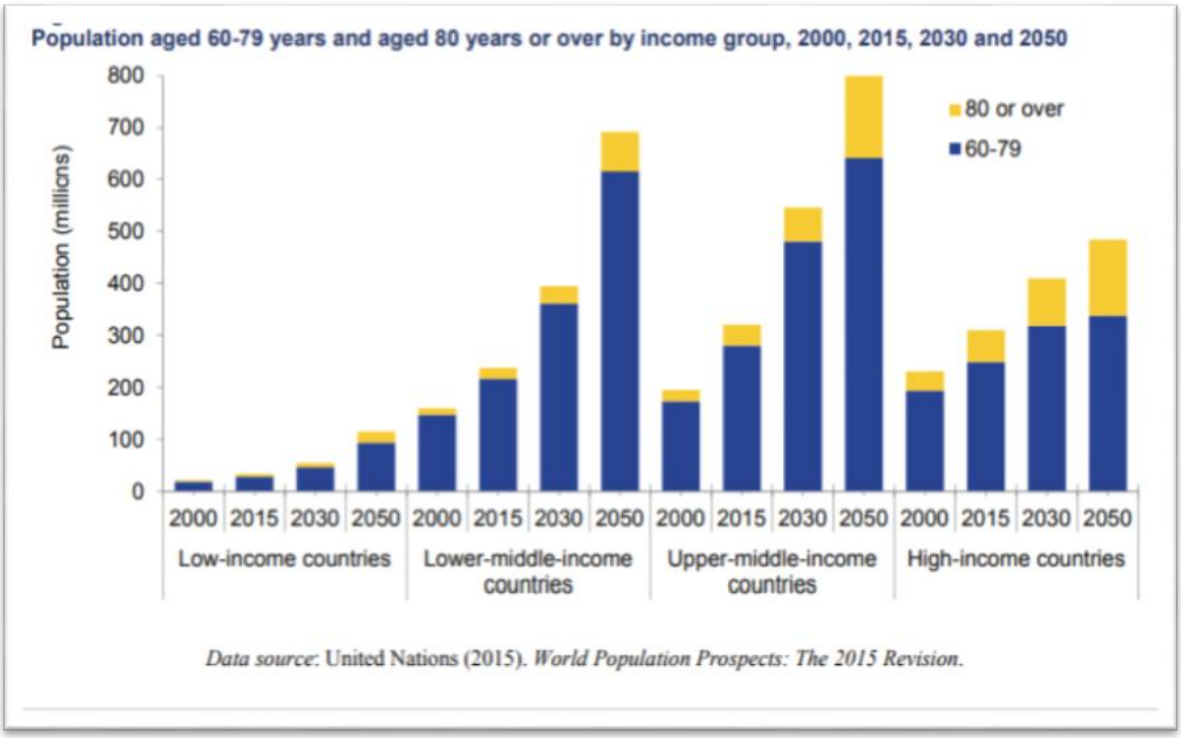


Figure 1.12 Population aged 60-79 and aged 80 and over by income group.

Figure 13 Global older population by age and sex 2015 and 2050

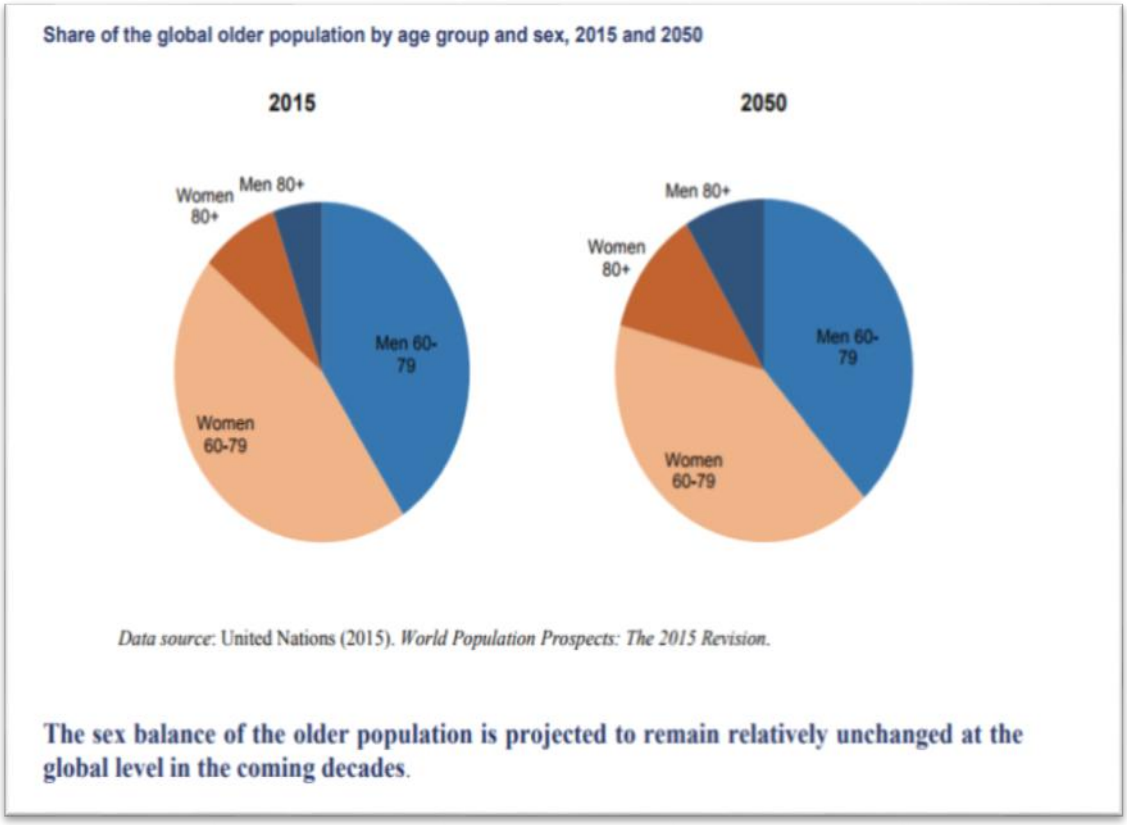


Figure 14 Population age between 2000 and 2015 for world and region in urban and rural area.

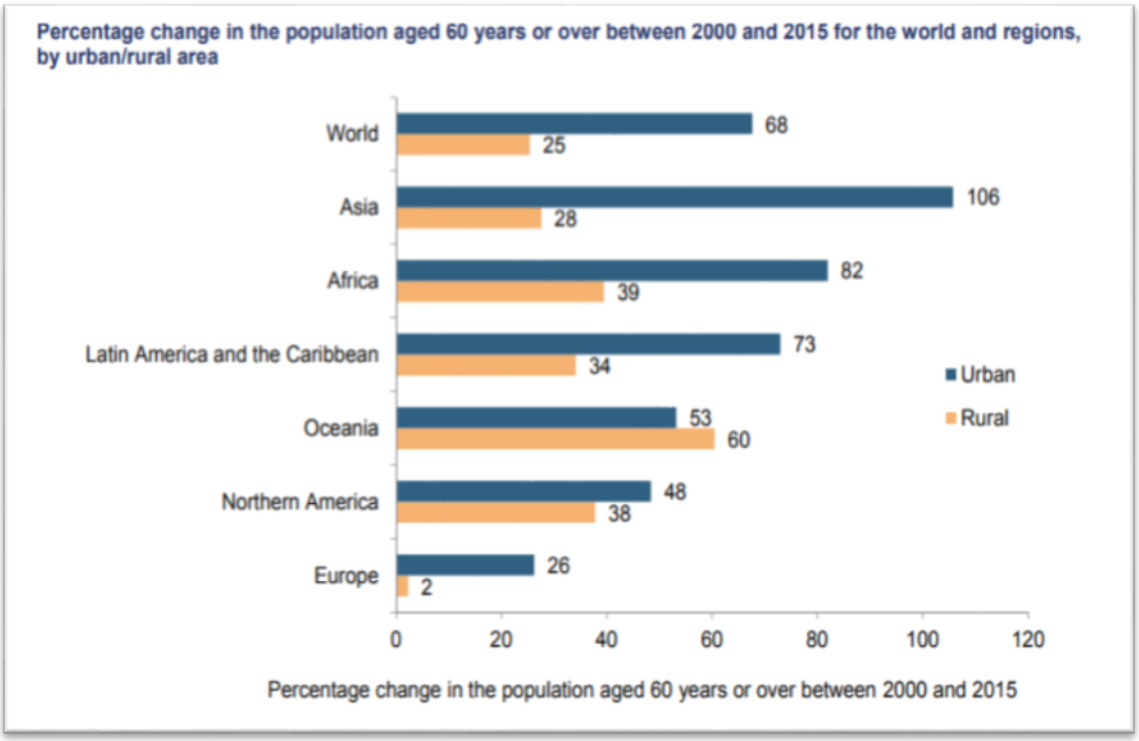


Figure 15 Population age by aged group between 2000, 2015,2030 ,2050

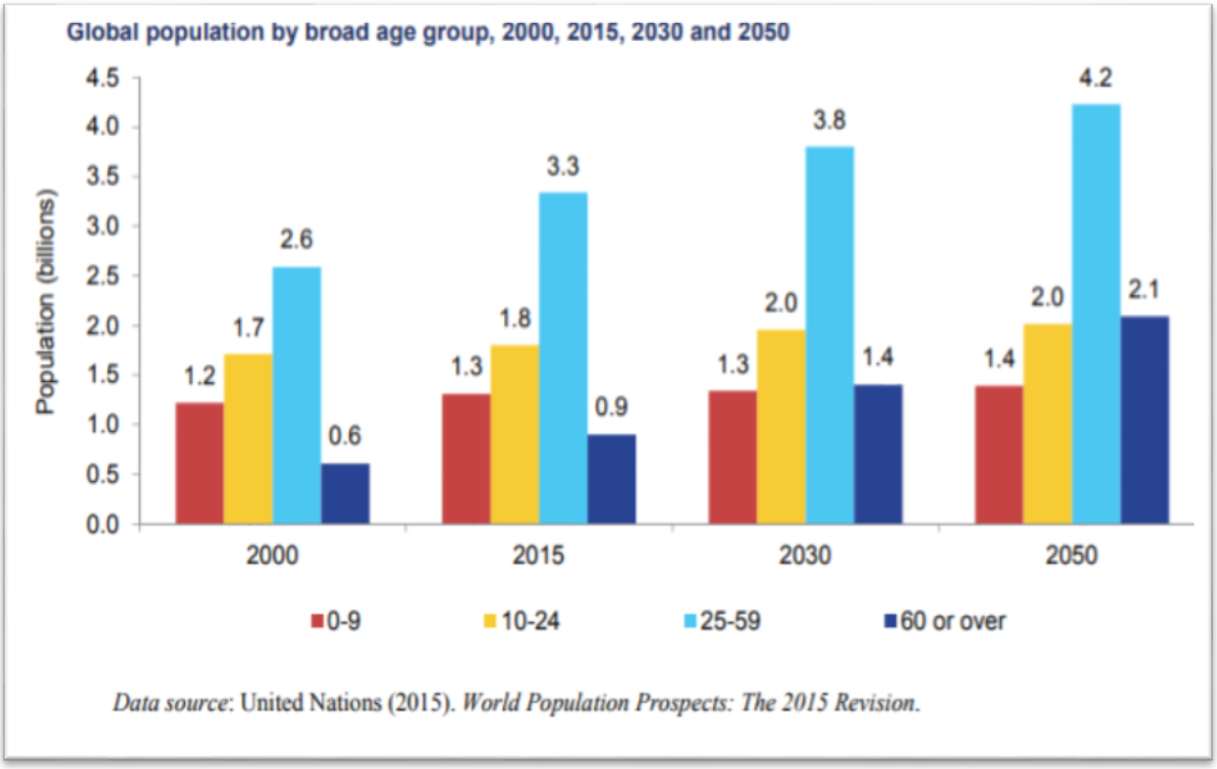
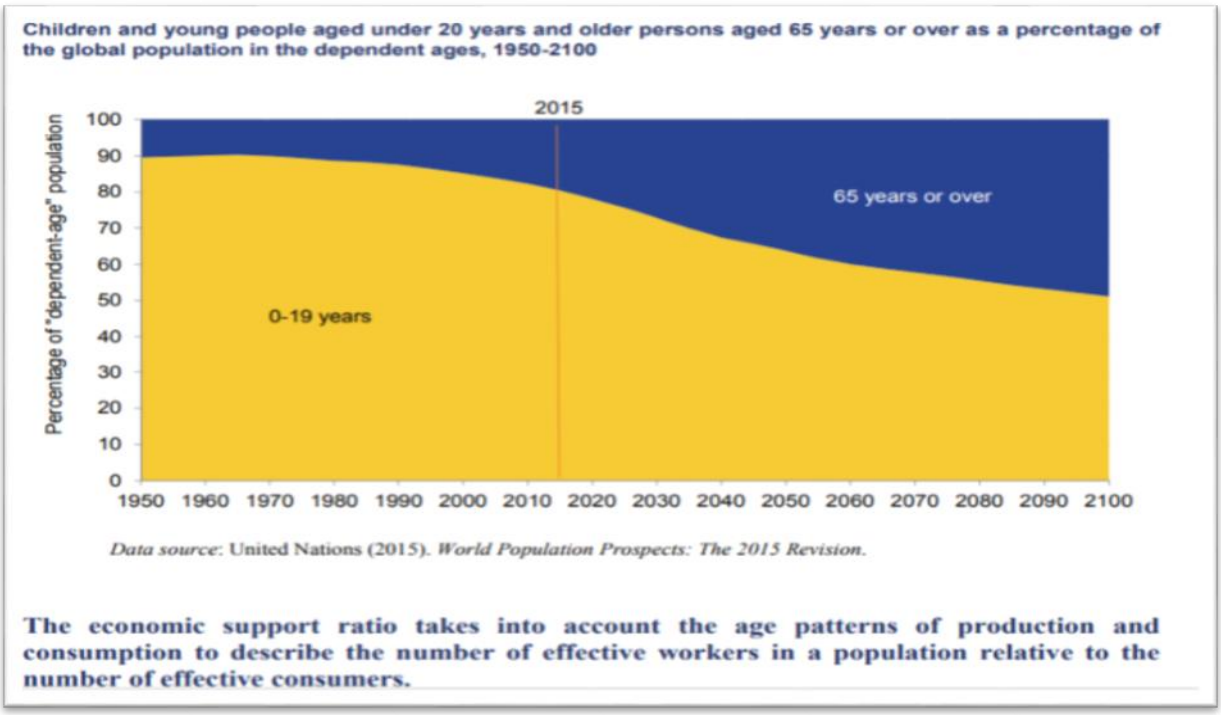


Figure 16 Dependent age between the population 0-19 and . 0ver 65 year group.



2.5 Senior people in Thailand

Senior Society: Thailand to be aging society in 10 years. The government recently revealed statistics showing that Thailand will become an aging society in a decade. The Ministry of Social Development and Human Security revealed that, by that time, people over 60 years old will make up 20 percent of the population while people ages 65 and above will account for 14 percent. An aging society is one in which the median age is increasing.
Though it sounds grim, an aging population is often related to becoming an advanced society. A larger number of older people means that citizens are living longer and a decline in younger people means that couples are waiting longer to have kids and having fewer of them, a phenomena often related to pursuing education and career before starting a family.
In light of the aging population, the Thai government is trying to provide more and better services to seniors including: more access to healthcare, jobs for able-bodied seniors, and continued education to keep older minds active during their golden years, reported Thai News Bureau.

Secretary-General to the Office of the Education Council Kamol Rodklai said the 20-year national education plan clearly states that people of all ages, including the elderly, are entitled to education. The plan focuses on encouraging Thais to be good citizens and to learn skills that are essential to 21st Century careers through various educational platforms.

Healthy seniors can learn and use their skills to make a living, even after they reach the age of retirement. The government wants the elderly to lead meaningful lives. With their considerable experience, senior citizens can also inspire and educate younger generations to make positive contributions to the country. (https://coconuts.co/bangkok/news/senior-society-thailand-aging-society-10-years/)

Population ageing in Thailand

1. Demographic Trends of Population Ageing

During the past several decades, Thailand has been one of the most successful countries in bringing down its fertility level within a short period of time. The total fertility rate has declined from over 6 births per woman in the mid 1960s to below 2 in the mid-1990s (Table 1). During the same period, life expectancy at birth increased from 55.2 years to 69.9 years for men and 61.8 years to 74.9 years for women. In the coming decades, besides the lowering of the growth rate, a major demographic consequence of this rapid fertility reduction will be an inevitable ageing of the population. Even more dramatic will be the rapid increase in the absolute size of the older population (aged 60 and over), a result of past high fertility levels and substantial declines of mortality.

2.6 Senior people and driving.

In 2015, there were more than 40 million licensed drivers ages 65 and older in the United States.[1] Driving helps older adults stay mobile and independent. But the risk of being injured or killed in a motor vehicle crash increases as you age. Thankfully, there are steps that older adults can take to stay safer on the roads.[https://www.cdc.gov/motorvehiclesafety/older_adult_drivers/index.html, 1 September 2018]

How big is the problem?

In 2014, more than 5,700 older adults were killed and more than 236,000 were treated in emergency departments for motor vehicle crash injuries. This amounts to 16 older adults killed and 648 injured in crashes on average every day. There were more than 40 million licensed older drivers in 2015, which is a 50 percent increase from 1999.

Highway Statistics 2015

Distribution of Licensed Drivers - 2015 By Sex and Percentage in each Age Group and Relation to Population

Federal Highway Administration, Department of Transportation (US). Highway Statistics 2015. Washington (DC): FHWA; September 2016.[cited 2016 Dec 21]. Available from URL: https://www.fhwa.dot.gov/policyinformation/statistics/2015/dl20.cfm [1September 2018]

Table 2 Distribution of Licensed Drivers - 2015 By Sex and Percentage in each Age Group and Relation to Population

	MALE DRIVERS			FEMALE DRIVERS			TOTAL DRIVERS		
	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/
UNDER 16	32,495	0.0	1.5	32,620	0.0	1.6	65,115	0.0	1.5
16	527,382	0.5	24.7	537,502	0.5	26.3	1,064,884	0.5	25.4
17	966,677	0.9	45.1	953,781	0.9	46.5	1,920,458	0.9	45.8
18	1,304,619	1.2	60.5	1,245,801	1.1	60.4	2,550,420	1.2	60.5
19	1,530,017	1.4	70.0	1,459,755	1.3	70.2	2,989,772	1.4	70.1
(19 AND UNDER)	4,361,190	4.1	40.4	4,229,459	3.8	41.0	8,590,649	3.9	40.7
20	1,645,437	1.5	73.4	1,578,873	1.4	74.4	3,224,310	1.5	73.9
21	1,707,768	1.6	74.6	1,660,552	1.5	76.6	3,368,320	1.5	75.6
22	1,791,158	1.7	76.8	1,740,421	1.6	79.2	3,531,579	1.6	78.0
23	1,857,286	1.7	77.8	1,831,076	1.7	80.9	3,688,362	1.7	79.3
24	1,912,171	1.8	79.1	1,905,706	1.7	82.2	3,817,877	1.8	80.6
(20-24)	8,913,820	8.3	76.4	8,716,628	7.9	78.7	17,630,448	8.1	77.5
25-29	9,599,910	8.9	84.1	9,665,917	8.8	87.5	19,265,827	8.8	85.8
30-34	9,483,821	8.8	87.1	9,635,915	8.7	89.3	19,119,736	8.8	88.2
35-39	8,948,342	8.3	88.0	9,139,345	8.3	89.6	18,087,687	8.3	88.8
40-44	8,976,495	8.3	89.5	9,130,641	8.3	89.6	18,107,136	8.3	89.6
45-49	9,439,868	8.8	91.3	9,547,861	8.6	90.8	18,987,729	8.7	91.1
50-54	10,129,724	9.4	92.4	10,358,348	9.4	91.1	20,488,072	9.4	91.7
55-59	9,858,801	9.2	93.0	10,209,251	9.2	91.1	20,068,052	9.2	92.0

	MALE DRIVERS			FEMALE DRIVERS			TOTAL DRIVERS		
	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/	NUMBER	PERCENT OF TOTAL DRIVERS	DRIVERS AS PERCENT OF AGE GROUP 1/
60-64	8,621,325	8.0	94.6	9,025,845	8.2	90.7	17,647,170	8.1	92.5
65-69	7,217,544	6.7	95.0	7,570,860	6.9	89.4	14,788,404	6.8	92.0
70-74	4,974,735	4.6	93.9	5,257,499	4.8	85.0	10,232,234	4.7	89.1
75-79	3,267,202	3.0	90.5	3,566,555	3.2	79.0	6,833,757	3.1	84.1
80-84	2,157,345	2.0	89.4	2,364,088	2.1	69.8	4,521,433	2.1	78.0
85 AND OVER	1,699,564	1.6	94.4	2,016,567	1.8	57.1	3,716,131	1.7	69.7
TOTAL	107,649,686	100.0	85.0	110,434,779	100.0	83.2	218,084,465	100.0	84.1

1/ These percentages are computed using population estimates of the Bureau of the Census. Under-16 age group is compared to 14 and 15-year-old population estimates; the other age brackets coincide with those from the Bureau of the Census.

Figure 17 Driver kill in road accident in the year 2011

2.7 Theory of Planned Behavior for applying in this research.

- This research concern to applying the theory of planned behavior for the prediction of vehicle safety driving in elderly people.
- Ajzen(1985) belief that perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and these intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior.

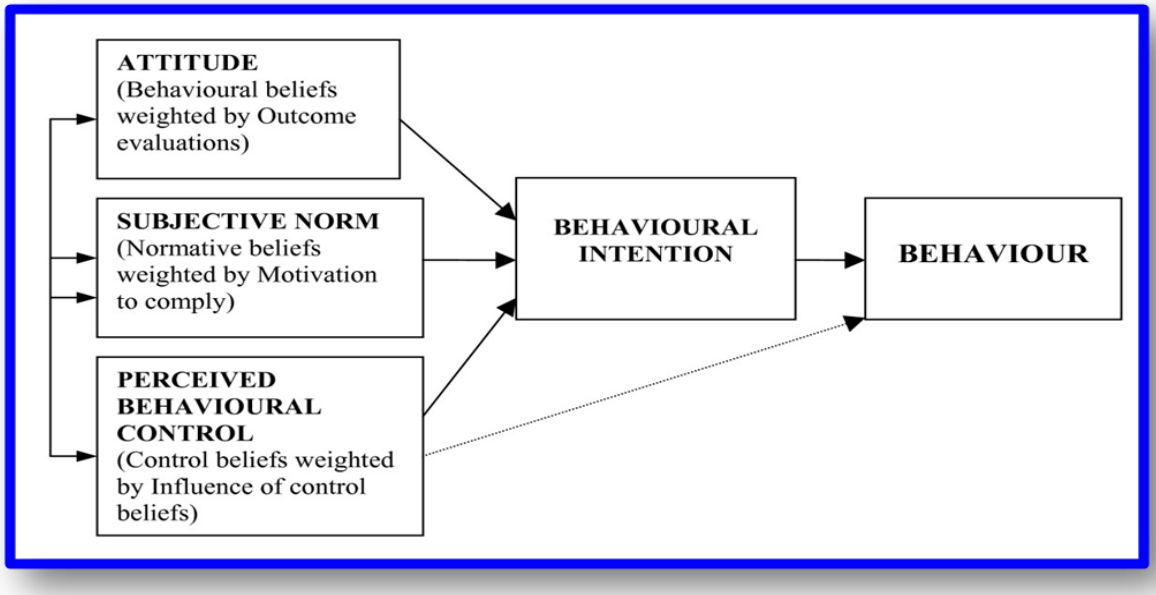


Figure 18 **Plan Behavior Theory, Ajzen and Fisbein,1985**

2.8 Previous Research

Foley, Heimovitz, Guralnik and Brock.(2002). Study driving life expectation of persons aged 70 year and older In the United States. *The objectives.* 0f this study estimated total life expectancy and driving life expectancy of US drivers aged 70 years and older. *Methods.* Life table methods were applied to 4,699 elderly persons who were driving in 1993 and reassessed in a 1995 survey. The *results showed that* drivers aged 70 to 74 years had a driving life expectancy of approximately 11 years. A higher risk of mortality among men as a cause of driving cessation offset a higher risk of driving cessation not related to mortality among women that resulted in similar driving life expectancies. Nationwide, many elderly drivers quit driving each year and must seek alternative sources of transportation. Because of differences in life expectancy, women require more years of support for transportation, on average, than men after age 70.

Langford; Koppel; Charlton; Fildes; Newstead.(2006) Study A Re – Assessment Of Older Drivers As A Road Safety Risk. Older drivers are

frequently viewed as overly represented in crashes, particularly when crash involvement per distance travelled is considered. This perception has led to a call for tighter licensing conditions for older drivers, a policy which inevitably results in mobility restrictions for at least some drivers. However there is a growing body of research evidence which shows that as a group, older drivers represent no greater road risk than drivers from other age groups once different levels of driving activity are taken into account. This paper has examined aspects of older drivers' fitness to drive based on survey data and off-road and on-road driving performance from a sample of 905 New Zealand older drivers. The results show that policies which target all older drivers and lead to licensing and mobility restrictions cannot be justified from a safety basis.

The sample of New Zealand older drivers showed strong evidence that drivers who travelled low mileages were liable to have more crashes per distance driven than drivers with higher mileages. Older drivers travelling 20km or less per week had around ten times the per-distance crash rate of drivers travelling 200km or more per week. The analyses presented in this paper also showed that low mileage drivers were more likely to report a reduction in their driving performance and to report a range of health and medical conditions. Further, they also per-formed less well on two of the three off-road fitness to drive screening tests and the NZDORT on-road driving test (an external measure of driving skills). Reduced fitness to drive is likely to be but one factor in explaining the elevated crash rates for the lowest mileage drivers. However the findings presented in this paper are valuable in further refining our understanding of the so-called older driver problem - particularly through identifying a small, more precisely defined target group for road safety countermeasures, while excluding most older drivers from any special safety scrutiny.

Hashimoto, Kato, and Tsugawa, (2009). Study A Cooperative Assistance System Between Vehicle For Elderly Drivers **.** Proposes a new concept of elderly driver assistance systems, which performs the assistance by cooperative

driving between two vehicles, and describes some experiments with elderly drivers. The assistance consists of one vehicle driven by an elderly driver called a guest vehicle and the other driven by a assisting driver called a host vehicle, and the host vehicle assists or escorts the guest vehicle through the inter-vehicle communications. The functions of the systems installed on a single-seat electric vehicle are highly evaluated by subjects of elderly drivers in virtual streets on a test track.

Musselwhite and Haddad.(2010). Study exploring older drivers' perceptions of driving. This research uses grounded theory to assess the driving needs of 29 older car drivers using four data collection techniques (two waves of focus groups, an interview and a driver diary). Findings suggest that older drivers view themselves as having better driving skills and attitude towards driving compared to when they were younger and compared to other drivers. In addition, they have a good ability to adapt to their changing physiology. Nevertheless, they report difficulty in assessing their own driving ability and cite they would like help to increase self-awareness about the driving task. In addition, the participants report having increasing difficulty in not having enough time to read, compute and comprehend road signs, maintaining a constant speed at the speed-limit, increased tiredness and fatigue and increased sensitivity to glare. The findings suggest given an iterative, qualitative methodology where driving issues are focused upon, older drivers can become more self-aware of their driving limitations and discuss these aspects in the context of ageing physiology. Overall, it can be seen that the participants viewed themselves as having better driving skills than when they were younger and indeed than many other road users. Despite this, they are aware of a number of failings in their ability, but feel in most cases they are able to overcome and compensate for such behaviours, either through changing driver behaviour (driving slower with increased gaps, for example) or changing their travel behaviour (not going out at night to avoid glare and luminance issues, not driving in the busiest times to avoid distraction and

being over-whelmed by the environment). However, it must be noted that in an ever growing car dependent society, a question for policy makers must be to consider whether older people be able to avoid such situations in the future and the potential consequences this has on road user safety coupled with a growing older person population. Further research is suggested to establish the certainness of these issues, through a larger more representative sample using robust and statistical techniques. The sample is small and somewhat biased towards older people who are able to travel and a key limitation of the research is that hard to reach individuals who may find driving so difficult that they are unable to drive very far and very often are not included in the sample. Nevertheless, this research has the potential to be a useful anchor for future studies that may focus on (older) driver needs. Focusing on older drivers needs and understanding how they might be met could enable older people to continue driving for longer, whilst retaining confidence in their ability, and ensure that they are safer drivers. In addition, the methodology has provided an opportunity for older people to get involved in research in a thoroughly participatory manner which has ensured that they feel able to shape the research and maximise benefits of the research outcomes for themselves and their age groups.

Jean M. Gaines ' , Kasey L. Burke , Katherine A. Marx , Mary Wagner , John M. Parrish Enhancing older driver safety: (2011): Study a driving survey and evaluation of the CarFit program. The objective of this study : To evaluate CarFit, an educational program designed to promote optimal alignment of driver with vehicle. Methods: A driving activity survey was sent to 727 randomly selected participants living in retirement communities. Drivers (n = 195) were assigned randomly to CarFit intervention (n= 83, M age = 78.1) or Comparison (n = 112, M age = 79.6) groups. After 6 months, participants completed a post-test of driving activity and CarFit recommendations. Results: Nonconsenting drivers were older and participated in fewer driving activ-ities. CarFit participation was moderate (71%) with 86% of the participants receiving recommendations. 60%

fol-lowed the recommendations at the 6-month re-evaluation). The CarFit (67.6%) and Comparison (59.3%) groups reported at least one type of self-regulation of driving activity at baseline. There was no significant change in the driving behaviors at the six-month follow-up. Conclusion: CarFit was able to detect addressable opportunities that may contribute to the safety of older drivers. Impact on industry: CarFit recommendations may need stronger reinforcement in order to be enacted by a participant.

Langford et al , (2013) .Study Findings from the Candrive/Ozcandrive study: Low mileage older drivers, crash risk and reduced fitness to drive.

Previous research has found that only older drivers with low annual driving mileages had a heightened crash risk relative to other age groups. These drivers tend to drive mainly in urban areas, where the prevalence of complex traffic situations increases crash risk. However it might also be that some drivers may have reduced their driving due to perceived or actual declines in driving fitness.

This paper uses Canadian and Australian data from the Candrive/Ozcandrive older driver study to investigate the association between annual driving distances and a set of driving-related factors, including fitness to drive.

All drivers in the Candrive/Ozcandrive older driver cohort study were allocated to one of three groups according to their self-reported annual driving distances: <5,001 km; >5,000 and <15,000 km; and 15,000 km or greater. Relationships between these driving-distance categories and: (a) self-reported crash data; (b) various Year 1 ‘fitness to drive’ performance measures; and (c) self-perceptions of driving ability and of comfort while driving, were determined.

Results confirmed the previously reported association between low mileage and heightened crash risk. Further, low mileage drivers performed relatively poorly on a wide range of performance measures, perceived their own driving ability as lower, and reported lower comfort levels when driving in challenging situations, compared to the higher mileage drivers. In most instances, these differences were statistically significant.

The paper provides further evidence that the so-called ‘older driver problem’ is most pertinent to low mileage drivers, and that this is due in part to low mileage drivers tending to have reduced fitness to drive. This higher risk group represented a fairly small proportion of the sample in this study.

The research has added to the growing body of research which suggests that the so-called ‘older driver problem’ is most pertinent to a small sub-group of low mileage drivers with reduced fitness to drive. For this sample, the low mileage group represented 15 percent of the total sample.

Esko Keskinen. (2014).Study education for older drivers in the future. Five presumptions have to be considered when addressing future education for older drivers: 1. Driving a car will continue to be one element of mobility in the future; 2. Older people want to be able to keep driving; 3. Safety will be an even more important factor in mobility in the future; 4. Ecological values will be more important in the future; and 5. Innovative technological applications will be more important in the future. Hierarchical models of driving are suitable in increasing understanding of older drivers' needs and abilities. The highest levels of the driving hierarchy in the Goals for Driver Education (GDE) model are especially important for the safety of both young and elderly drivers. In these highest levels goals for life, skills for living, and social environment affect everyday decision making in general but also driving, which has an impact on driver safety. Giving up driving is very much a social decision and should be taken as such. However, the highest levels of the driving hierarchy are by nature in-accessible to teacher-centered instruction These levels require more coaching-like education methods where the learner takes the central role and the teacher helps the drivers understand their own abilities and limitations in traffic. Testing and selecting older drivers to enhance safety is not, according to research findings, working in a proper way. Older drivers do not so much need more information concerning traffic rules, etc., but rather better understanding of themselves, their health restrictions, their skills, and their abilities to ensure daily mobility. Their closest

companions also need tools to help them in discussions of traffic safety issues affecting older drivers. The aim in education for older drivers could perhaps be simplified by saying that it should not be teaching knowledge or skills and teachers should not simply give information to older people. It could be more of a process in mutual understanding where the teacher helps the older driver learn more about his or her own abilities and challenges in driving. It could also help older drivers solve their mobility problems in a safe and ecological way

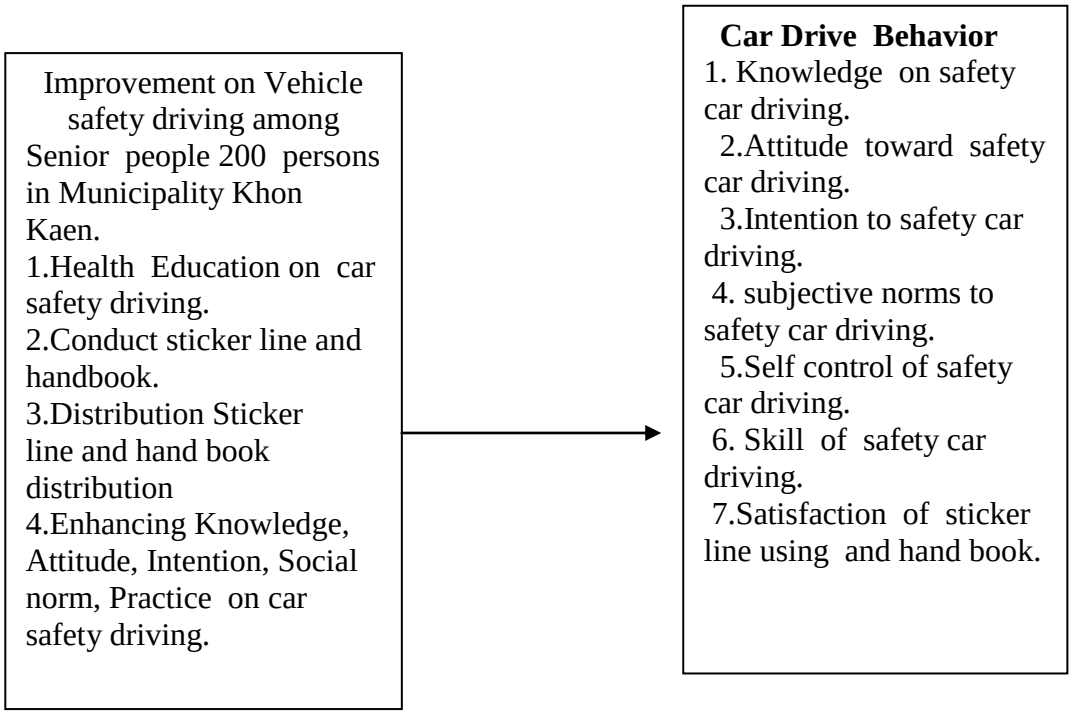
Yasushi Nishida (2015).Analyzing accidents and developing elderly driver-targeted measures based on accident and violation records. This study performed a variety of analyses using the Institute for Traffic Accident Research and Data Analysis' Integrated Driver Database with traffic accident and violation records. The database integrates driver management data and road traffic accident statistics data, making it possible to explore the relationships among driver attributes and road traffic accident characteristics in considerable detail.

By controlling the compilation conditions and refining the sets of driver attributes, The analysis showed that drivers who experience accidents drive more carefully immediately after an accident, revealed high accident rates among drivers who have experienced certain violations, and produced other findings that could constitute a foundation for developing individual driver-targeted measures. Our analysis of large age groups, meanwhile, showed that drivers with a history of numerous accidents or apprehensions/violations are more likely to cause accidents.

The Integrated Driver Database with traffic accident and violation records boasts an expansive scope, covering all of the 81 million licensed drivers in Japan, and features 200 variables pertaining to driver attributes, accidents, and violations. In addition to letting users refine their focuses by driver age, sex, and place of residence, the database also enables analyses that account for lifestyle-related variables like when drivers received their licenses and whether drivers have

moved to new addresses. The sheer diversity of driver attributes in the database makes it a promising resource for formulating driver-targeted measures.

2.9 Conceptual Framework



CHAPTER 3 RESEARCH METHODOLOGY

This is quasi experiment research, one group pre post design. Population and samples 1.) 200 general old age people in 1 province, in the Northeastern Thailand study in municipality Khon Kaen, Thailand.

3.1 Research Methodology

: This is quasi experiment research , one group pre post design. There are 8 steps of study

1.Select 1 province in the northeastern of Thailand and then purposive sampling is Municipality Muang, Khon Kaen, Thailand.

2. Approach to 3 senior Centers in Municipallity, Khon kaen namely

1. Srichan temple senior center which most senior people is retirement senior people from official government

2.Nongwang Temple.. which cooperation among Nongwang temple, municipality, and Khon kaen hospital work together call Happiness increasing Center.

Senior Club in Regional Health Promotion Center 7 Khon Kaen 7, this place there are established for senior people around hospital come to join exercise and physical check examination.

3. Approach to senior people in community and senior center both female and male by accidental technique who still driving.

4.Research tools conduction for data collection for quantitative data .

5. Tools for improving safety driving among senior people 2 kinds by researchers such as sticker line and hand book.

6. Data collection quantitative data by questionnaire interviewing .

7.Data analysis for comparison between pre test and post test among senior drivers.

8. Summarize and full paper complete including publication.

3.2 Population and samples

Old age people who were more than 60 year old.

Population and samples : Sample size calculation for unknown population

$$n = \frac{(P)(1-P)\ Z^2}{e^2}$$

n = Sample size, p = proportion of population .50

Z = standard score 95% =1.96 e = error 7 %

n = 195.91 : (adjust =200)

3.3 Research Design

Experimental diagram

O1 X O2

O1 Pre test by questionnaire before implementation.

O2 Post test by questionnaire after implementation.

X Improving vehicle safety by safety education promotion by using sticker line and handbook for car safety driving.

3.4 Research Tools

The research tools were two types 1. Tools for data collection were questionnaire 8 parts. 2. Research tools for implementation for improving safety driving among senior people 2 kinds which conducted by researchers such as sticker line and hand book.

3.4.1 Questionnaires for data collection , There are 8 parts compost of questionnaires..

Part 1 Characteristic questionnaire 15 items, select appropriate choice and fill in the blank for correct issue such as gender, age, education, income, experience of car driving, etc

- **Part 2** Questionnaire of knowledge for car safety driving among senior people. There are 15 items each item are 3 choices. Yes, No, Unknown, correct choice got 1 score.
- **Part 3** Questionnaire for attitude toward car driving 10 items , likert scale, 3 level to for 1 selection, Yes, Not sure and No,
- **Part 4** Questionnaire for belief of group for car driving among elderly people 8 items, each item 3 level, high, moderate and low level for selection.
- **Part 5** Questionnaire for self control for car driving. 10 items, each item 3 level, high, moderate and low level for selection.

- **Part 6** Questionnaire for intent to car driving. 10 items, each item 3 level, high, moderate and low level for selection.
- **Part 7** Questionnaire for practice of car driving. 10 items, each item 3 level,regular, sometime and never for selection.
- **Part 8** Questionnaire for satisfaction of car driving media both sticker line and handbook. (Post test only for media evaluation) 12 items, each item 3 level, high, moderate and low level for selection.
- Open end…for fill opinion of participant.

3.5 Data analysis

Quantitative data.

Bring information to the correctness, put them into code and analyze with computer by using the statistical package SPSS program for descriptive statistic by using frequency distribution, percentage, mean standard deviation and using Pair t test for pre post test.

Media1 :Sticker Line1 (Static)


สูงวัย คือ
ร่มไทร
ของลูกหลาน
เครื่องหมาย
ห้ามจอดรถ


ใบขับขี่
มีไว้
ไม่
ประมาท
ขับรถไม่ใจร้อน
เอื้ออาทรเพื่อนร่วมทาง
เชิญค่ะ
ขอบคุณ
ครับ
HURRY


ระวังถนนขรุขระ
เป็นหลุม เป็นบ่อ
ATRANS
IATSS
ห่วงใย
ปลอดภัยนะคะ

Data Collection at Health center Region 7 (Pre-test)



Media :Sticker Line 2(Dynamic)


ตั้งสติ
ก่อน
สตาร์ท
START
80
ขับเร็วไม่เกิน
80 กม./ชม.


ต้องระวัง
เป็นพิเศษ
ขับรถดี เป็นอิสระ
ไร้ภาระคดีความ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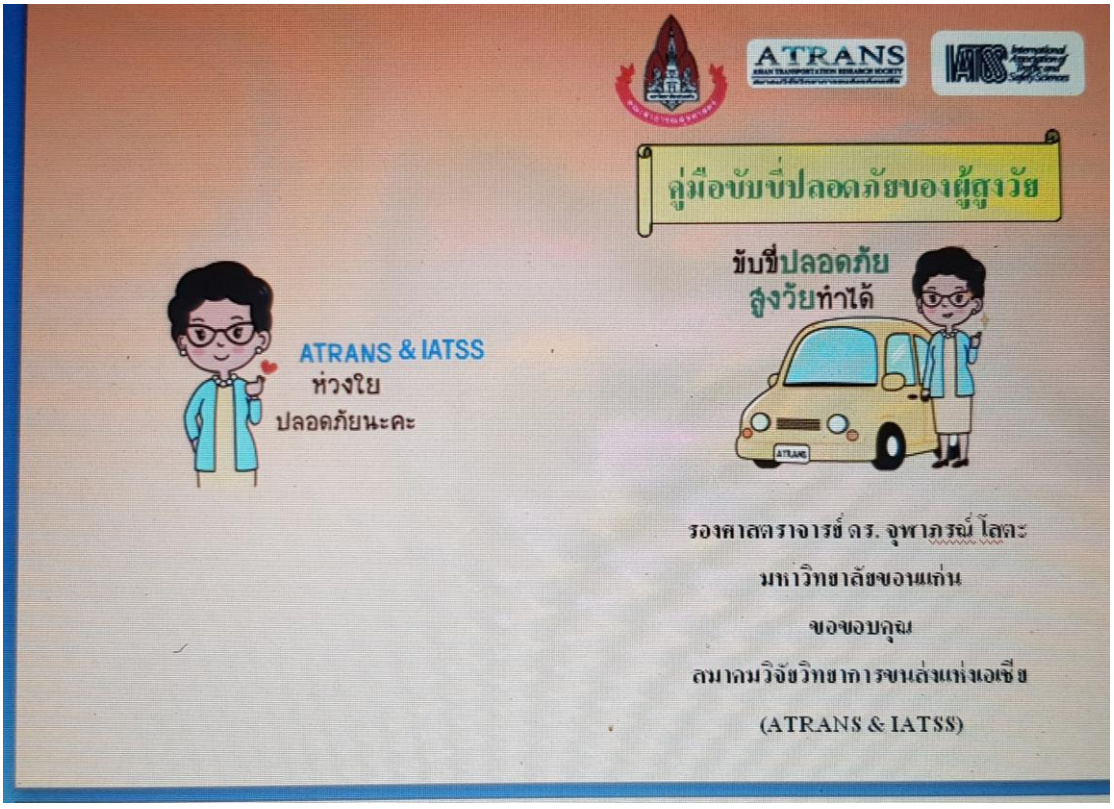
Handbook for car safety



CHAPTER 4 RESULTS DISCUSSION

This research study is to study the construction of driving safety in the elderly. The research model is an experimental design. (Quasi-Experimental Research) data were collected using interview forms before and after the experiment. A small group of 200-69, 70-79 and more than 80 years of age, with 200 people and the data obtained was validated and analyzed using S TATA Version 10 (University Copyright Khon Kaen) presents the analysis results in 2 parts as follows:

1. Research findings

1.1 General information of the samples

1.2 Comparison of mean differences Knowledge about driving safety before and after the experiment

1.3 Comparison of differences of mean values towards driving a car Before and after the experiment

1.4 Comparison of differences of mean values of the reference group that affect driving safety before and after the trial

1.5 Comparison of differences of meanings of self-control in driving before and after Experiment

1.6 Comparison of differences in mean driving intentions before and after the experiment

1.7 Comparison of differences in mean values of practice The driving behavior of the elderly before and after the experiment.

1.8 Satisfaction with the program for enhancing the driving safety after the experiment.

2. Discussion of the findings.

1. Research findings

1.1 General information of sample

1.1.1 Sample Population Characteristics

1.1.1.1 Sex, which found that the majority of the trial group was 51.5 percent male, 48.5 percent, respectively,

1.1.1.2 age, found that most experimental groups were 60-69 years old, 71.5 percent, aged 70-79 and 27 percent, respectively,

1.1.1.3. Marital status showed that most had marriage status, 69.5 percent, 15 percent, respectively,

1.1.1.4 Most experimental groups had a bachelor's degree of 54.5 percent, 21 percent higher than the bachelor's degree, respectively.

1.1.1.5 Chronic illnesses: The experimental group had no congenital disease at 50.5% and 49.5% of the chronic diseases, most of which were high blood pressure 64.65%, followed by 22.22% of diabetes, respectively.

1.1.1.6 Most of the experimental group had driven for more than 26 years, 87.5%

1.1.1.7 Most of the experimental group were retirement.

1.1.1.8 Percentage of income found that the experimental group had an average income of 36,892.87 baht

1.1.1.9 They had a driver license 97% and no driver license 3%

1.1.1.10 They had never had an accident 94.5% and had an accident 5.5%

1.1. 1.11 Most had no set time quitting car driving,. 76.5%

1.1.1.12 Have ever trained to drive safely or not, found that the experimental group has never trained to drive a car 53.5% and had trained to drive 46.5%

1.1.1.13 They have eye and ear examination 56% and 44% did not check

1.1.1.4 Most think that they have influence to drive 59.5%

1.1.1.15 Most do not want to practice car driving percentage 88 and want practice driving, 12 percent, details as shown in Table 1.

Table 1 Number and percentage of samples Classified by general information

General information	Experimental group (n=200)		
	Number	mean	Percentage
1. Gender			
Male	103	0.515	51.5
Female	97	0.485	48.5
2. Age			
60-69 years	143	0.715	71.5
70-79 years	54	0.270	27
>80 years	3	0.015	1.5
3. Marital status			
Single	17	0.085	8.5
Married	139	0.695	69.5
Divorce	30	0.15	15
Separate	14	0.07	7
4. Education			
Primary School	9	0.045	4.5
Junior High school	9	0.045	4.5
Senior High School	15	0.075	7.5
Diploma	16	0.08	8
Bachelor's degree	109	0.545	54.5
➢ Bachelor's degree	42	0.21	21
5. Health			
Healthy	101	0.505	50.5
Disease	99	0.495	49.5

Table 1 Number and percentage of samples Classified **(**Cont)

General information	Experimental group (n=200)			
	Number		Number	
1.Hypertension	64	0.646	64.65	1.52
2. Diabetes M.	22	0.222	22.22	1.60
3. Heart Disease	4	0.040	4.04	1.53
4. Asthma	2	0.020	2.02	1.49
5. cancer	1	0.010	1.01	0
6. Other	6	0.061	6.06	2.21
6. Experience of car driving				
< 5 years	3	0.015	1.5	1.86
6-10 years	5	0.025	2.5	1.17
11-15 years	10	0.05	5	1.15
16-20 years	7	0.035	3.5	1.16
21-25 years	18	0.09	9	1.11
➢ 26 years	157	0.785	78.5	1.10
7. Occupation				
Unemployed	16	0.08	8	1.66
Agriculture	2	0.01	1	1.68
Commerce	9	0.045	4.5	1.96
Hide	5	0.025	2.5	2.03
Government officers	11	0.055	5.5	1.54
Retirement	144	0.72	72	1.55
Other	13	0.065	6.5	1.62
8. income	7,378,574	36,892.87	33,532.4	
9. Car driving license				
Yes	194	0.97	97	0.17
No	6	0.03	3	0.19

Table 1 Number and percentage of samples Classified **(**Cont)

General information	Experimental group (n=200)			
	Number		Number	
10. car accident				
Never	189	0.945	94.5	0.23
Yes	11	0.055	5.5	0.25
11. intention quit driving				
No limit	153	0.765	76.5	1.30
Within 1-3 years	6	0.03	3	1.33
Within 5 years	1	0.085	8.5	1.29
Within 10 years	14	0.07	7	1.32
Within 15 years	3	0.015	1.5	1.51
Other	7	0.035	3.5	1.37
12. Experience of car driving trained				
Never	107	0.535	53.5	0.5
Yes	93	0.465	46.5	0.5
13. Physical examination				
Yes	112	0.56	56	0.49
No	88	0.44	44	0.50
14. Factor effect to driving				
Spouse	47	0.235	23.5	0.91
Children	24	0.12	12	0.90
Yourself	119	0.595	59.5	0.90
Other	10	0.05	5	0.90

Table 1 Number and percentage of samples Classified **(**Cont)

General information	**Experimental group (n=200)**			
	Number		**Number**	
15. Need to car driving train				
Yes	24	0.12	12	0.35
No	176	0.88	88	0.32

1.2 Knowledge of Driving Safety Before And after experiment.

1.2.1 The safest general driving speed is 100 km/h. It found that before most experiment were not 81.5 percent, and most after experiment was not 99 percent

1.2.2 Driving doesn't have to wear a seat belt if high experts. It found that before most experiment were not 93.5 percent, and most after experiment was not 98 percent,

1.2.3 Do not allow all cars to pass into the label-mounted zone. Yes, 60 percent, and after most experiment, yes, 95 percent,

1.2.4 Signs prohibiting to turn left and returning found that before experiment were correct 57 percent, and after experiment, correct 70 percent

1.2.5 Sign for parking . Found that before most experiment, correct 55 percent and after most experiment correct 95 percent.

1.2.6. Prohibit all car go through traffic sign. Found that before experiment, correct , 55 percent and after most experiment correct 98 percent .

1.2. Do not turn left sign. Before experiment correct 53 percent, and after experiment correct 52 percent

1.2.8 Turn-on traffic light at 30 At least 30 meters before turning for road disaster. Before experiment correct 55 percent and after experiment correct 98.5 percent .

1.2.9 Driving through intersection and active yellow flashing lights. The driver must speed up the car and pass through the carriage way as soon as

possible. It found that before experimental correct 91 percent, and most after experimental correct 98 percent.

1.2.10 Driving through the intersection with a traffic signal is flashing red. The driver must stop behind the bus stop. When it is safe and does not interfere with traffic. Continue with caution or not. before experimental correct 55 percent and after experimental correct 97 percent

1.2.11 Driving when raining , must use windshield wiper, and decrease speed, increase careful and not use emergency light. before experimental correct 45 percent, and after experimental correct 91 percent.

1.2.12 Show traffic light or horns honking when need to change lane, before experimental correct 55 percent, and after experimental correct 53 percent .

1.2.13 Slowly driving has to close to left or right edge, before experimental correct 85 percent, and after experimental correct 97 percent.

1.2.14 The driver wants to get back to the car, must see the traffic stop allowed to return and enter the correct lane, before experimental correct , 75 percent, and after experimental correct , 99 percent.

1.2.15 Driver need to u turn, has to see permit sight for allow and go correct lane, before experimental correct 42.25 percent, and after experimental correct , 57.89 percent detailed in Table 2.

Table 2 number and percentage of samples, according to knowledge of driving safety.

Item	Knowledge of driving safety.	Before		After	
		Number (N=200)	Percentage	Number (N=200)	Percentage
1	Safety speed driving is 100 km/hour				
	Yes	32	16	0	0
	No	163	81.5	198	99
	Unknown	13	2.5	2	1
2	High skill driving, not necessary to use safety belt.				
	Yes	13	6.5	4	2
	No	187	93.5	196	98
3	 Prohibit all car go to this area in this sign.				
	Yes	120	60	190	95
	No	79	39.5	8	4
	Unknown	1	0.05	2	1
4	 Sign for prohibit to turn left and U tern.				
	Yes	78	39	51	25.5
	No	114	57	140	70
	Unknown	8	4	9	4.5

Table 2 Number and percentage of samples, according to knowledge of driving safety.

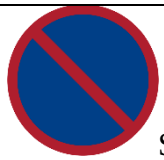
Item	knowledge of driving safety.	Before		After	
		Number	Percentage	Number	Percentage
5	 Sign for stop car.				
	Yes	110	55	190	95
	No	87	43.5	7	3.5
	Unknown	3	1.5	3	1.5
6	 Prohibit all car go through in this sign.				
	Yes	110	55	197	98.5
	No	89	44.5	1	0.5
	Unknown	1	0.5	2	1
7	 Sign for prohibit to turn left				
	Yes	107	53.5	104	52
	No	88	44	96	48
	Unknown	5	2.5	0	0
8	Turn on traffic light at 30 km. before turn for safety.				
	Yes	110	55	197	98.5
	No	85	42.5	3	1.5
	Unknown	5	2.5	0	0

Table 2 Number and percentage of samples, according to knowledge of driving safety.

Item	knowledge of driving safety.	Before		After	
		Number	Percentage	Number	Percentage
9	Driving through intersection and active yellow sign, must increase high speed and pass urgently.				
	Yes	16	8	3	1.5
	No	183	91.5	197	98.5
	Unknown	1	0.5	0	0
10	Driving through intersection and active red sign, must stop at then drive ahead if sure safety enough.				
	Yes	110	55	195	97.5
	No	86	43	5	2.5
	Unknown	4	2	0	0
11	Driving when raining , must use windshield wiper, and decrease speed, increase careful and not use emergency light.				
	Yes	90	45	182	91
	No	106	53	18	9
	Unknown	4	2	0	0
12	Show traffic light or horns honking when need to change lane .				
	Yes	110	55	106	53
	No	88	44	93	46.5
	Unknown	2	1	1	0.5

Item	Knowledge of driving safety.		Before		After	
			Number	Percentage	Number	Percentage
13	Slowly driving has to close to left or right edge.					
		Yes	27	13.5	4	2
		No	170	85	194	97
		Unknown	3	1.5	2	1
14	Driver need to turn , has to use right hand only.					
		Yes	150	75	198	99
		No	50	25	2	1
15	Driver need to u turn, has to see permit sight for allow and go correct lane.					
		Yes	50	42.25	115	57.89
		No	112	56.25	83	41.36
		Unknown	3	1.5	2	0.75
		Total	200	100	200	100
	$\bar{X}$±S.D.		2.64±0.06		2.88±0.17	

1.2.1 Knowledge of driving safety

Before r to the experiment, most of them had knowledge of driving safety at a level that was not accounted for 56.25 percent and after the experiment, most of them had knowledge about driving safety at the yes level 57.89 Details are shown in Table 3

Table 3 The average percentage and standard deviation classified by the level of driving safety knowledge. Before and after the experiment

knowledge of driving safety	Before		After	
	Number	Percentage	Number	Percentage
yes	85	42.25	115	57.89
no	112	56.25	83	41.36
Unknown	3	1.5	2	0.75
Total	200	100	200	100
$\bar{X}$±S.D.	2.64±0.06		2.88±0.17	

1.2.2 Comparison of differences, meanings, and knowledge about driving safety Before and after the experiment, before the experiment, it was found that the experimental group had a mean of knowledge about driving safety 2.62 standard deviation 0.16. After the experiment, it was found that the experimental group had an average of knowledge about safety. In driving, 2.88 standard deviation 0.17 when comparing the differences in the mean aperture. Regarding driving safety, found that after the experiment, there is an average knowledge about driving safety. Safe driving More than before the experiment with statistical significance (p-value <0.001; 95%CI 0.14 to 0.35) As shown in the table 4.

Table 4 Comparison of different mean, knowledge about driving safety Before and after the experiment

knowledge about driving safety	$\bar{X}$	SD	95%CI	t	p-value
Before	2.64	0.16	0.14 to 0.35	4.93	<0.001
after	2.88	0.17			

1.3 Questionnaire about driving attitude toward car safety driving Before and after the experiment.

1.3.1 The confident of drive well, found that most experiment. yes 74% and

after most of the experiment. yes 92%

1.3.2 The confident to prepare before driving Found that most experiment yes 76.5 percent and after experiment yes 92.5 percent

1.3.3 The Confident to drive with limit speed 80 km/hour. not more than 80 km / h. Found that most before experiment yes 77 percent and after experiment yes 87.5% ..

1.3.4 The confident guy strong and good enough to drive (Ears, Eyes) Found that most before experiment yes 72.5% and after found that most experiment yes 92.5% .

1.3.5 Driving is the important thing in life. It was found that that most before experiment yes 71 percent and after found that most experiment yes 91 percent.

1.3.6 Alcohol drinking before driving sometime, found that before most experimental were not 65 percent and after most experiment were not 75 percent

1.3.7. Respect to traffic law when driving, found that before most experiment yes 68.5 percent and after most experiment yes 97. 5 percentages

1.3.8 Confident to drive safety always to drive safely. It was found before most experiment 79% and after most experiment 81.5%.

1.3.9 Senior people should drive usual, found that before most experiment 60% and after most experiment 75.5% .

1.3.10. Senior driving cause of traffic accident , found that before most experiment are not 37.5 percent and after most experiment 44 percent, details are shown in Table 5.

Table 5 Number and percentage of samples Classified by attitude towards driving cars

Items	Attitude towards driving cars	Before		After	
		Number (n=200)	**Percentage**	**Number (n=200)**	**Percentage**
1	Confident to drive a car				
	Yes	148	74	184	92
	Not sure	35	17.5	10	5
	No	17	8.5	6	3
2	Confident to prepare before driving.				
	Yes	153	76.5	185	92.5
	Not sure	26	13	12	6
	No	21	10.5	3	1.5
3	Confident to drive with limit speed 80 km/hour.				
	Yes	154	77	175	87.5
	Not sure	32	16	24	12
	No	14	7	1	0.5

Table 5 Number and percentage of samples Classified by attitude towards driving cars

Item	Attitude towards driving cars	Before		After	
		Number	Percentage	Number	Percentage
4	Confident guy strong and good enough to drive (Ears, Eyes)				
	Yes	145	72.5	185	92.5
	Not sure	42	21	14	7
	No	13	6.5	1	0.5
5	Driving is the important thing in life.				
	Yes	142	71	182	91
	Not sure	38	19	16	8
	No	20	10	2	1
6	Alcohol drinking before driving sometime				
	Yes	45	22.5	16	8
	Not sure	25	12.5	34	17
	No	130	65	150	75
7	Respect to traffic law.				
	Yes	137	68.5	195	97.5
	Not sure	39	19.5	5	2.5
	No	24	12	0	0
8	Confident to drive safety always				
	Yes	158	79	163	81.5
	Not sure	21	10.5	37	18.5
	No	21	10.5	0	0

Table 5 Number and percentage of samples Classified by attitude towards driving cars

Item	Attitude towards driving cars		Before		After	
			Number	Percentage	Number	Percentage
9	Senior people should drive. Normally.					
		Yes	120	60	151	75.5
		Not sure	43	21.5	41	20.5
		No	37	18.5	8	4
10	Senior driving cause of traffic accident.					
		Yes	65	32.5	64	32
		Not sure	60	30	48	24
		No	75	37.5	88	44

1.3.1 Attitude towards driving

Before the experiment, most of the attitude towards driving cars were at the yes level. Accounted for 63.35 percent and after the experiment, most of the attitude towards driving was at the yes level Representing 75 percent, details as shown in Table 6.

Table 6 Average percentage, percentage and standard deviation classified by driving attitude level Before and after the experiment

Attitude towards driving	Before		After	
	Number	Percentage	Number	Percentage
Yes	167	63.35	150	75
No	36	18.05	24	12.05
Not sure	37	18.8	26	12.95
Total	200	100	200	100
$\bar{X}$±S.D.	2.44±0.38		2.62±2.62	

1.3.2 Compare the difference of the average attitude towards driving. Before and after the experiment, before the experiment, it was found that the experimental group had an average attitude towards driving 2.44 standard deviation 0.38. After the experiment, it was found that the experimental group had an average attitude towards driving 2.62 Standard deviation 0.55 when comparing the After the experiment, it was found that after the experiment, there was a significantly higher attitude towards driving than before the experiment. Statistical (p-value 0.02; 95% CI 0.03 to 0.31) as detailed in Table 7.

Table 7 compares the difference of the average attitudes towards driving a car. Before and after the experiment

Attitude towards driving a car.	$\bar{X}$	SD	95%CI		t	p-value
Before	2.44	0.38	0.03	ถึง	2.82	0.02
			0.31			
after	2.62	0.55				

1.4 Questionnaire about beliefs of reference groups that affect driving safety Before and after the experiment

1.4.1 Family member encourage to drive car found that most before experiment yes 55% and most after experiment yes 89 % .

1.4.2 Family member need your help for driving. Most before experiment confident with 44.5% and after most before experiment 74% are very confident

1.4.3 Senior driving increase concern of family member, found that before the experiment, most of them are confident about 65% and after most of the experiment, 69.5% are confident.

1.4.4 Family member try to check up the car for senior people. find that most of before experiment are 51.5% confident and after most of the experiment71% .

1.4.5 People who next to you on the car seat try to warn for safety driving. to help remind drive careful experiments showed that before experiment was 46.5 percent and after the experiment most was 49.5 percent

1.4.6 Family member need you to stop driving. experiments showed that before experiment was 47.5 percent and after the experiment most was 45 per cent

1.4.7 Family member try to drive a car much more than need senior people drive found that before experiment was 50 percent. and after the experiment, most were confident about 44 percent.

1.4.8 Family member prohibit senior people drive a car strongly. It is found that most before experiment was 50% confident and after most experiment was 55% .details are shown in Table 8.

Table 8 Number and percentage of samples Classified by beliefs of reference groups

Item	Beliefs of reference groups	Before (n=200)		After (n=200)	
		Number	Percentage	Number	Percentage
1	Family member encourage to drive car.				
	High	110	55	178	89
	Moderate	60	30	10	5
	Low	30	15	12	6
2	Family member need your help for driving.				
	High	89	44.5	148	74
	Moderate	71	35.5	32	16
	Low	40	20	20	10
3	Senior driving increase concern of family member.				
	High	29	14.9	139	69.5
	Moderate	130	65	45	22.5
	Low	41	20.5	16	8
4	Family member try to check up the car for senior people.				
	High	35	17.5	142	71
	Moderate	103	51.5	37	18.5
	Low	62	31	21	10.5

Table 8 Number and percentage of samples Classified by beliefs of reference groups (Cont)

Item	belief of reference groups	Before (n=200)		After (n=200)	
		Number	Percentage	Number	Percentage
5	People who next to you 0n the car try to warn for safety driving.				
	High	37	185	31	15.5
	Moderate	70	35	99	49.5
	Low	93	46.5	70	35
6	Family member need you to stop driving.				
	High	10	5	30	15
	Moderate	95	47.5	80	40
	Low	95	47.5	90	45
7	Family member try to drive a car much more than need senior people drive.				
	High	10	5	29	14.5
	Moderate	90	45	88	44
	Low	100	50	83	41.5
8	Family member prohibit senior people drive a car strongly.				
	High	8	4	26	13
	Moderate	92	46	64	32
	Low	100	50	110	55

1.4.1 The belief of reference groups affecting driving safety, before most trials have the belief of referral groups affecting driving safety in moderate. And after most trials, there is a belief of a referral group that affects driving safety at a very high level. 45.19% of the details shown in Table 9.

Table 9. Percentage, average, and standard deviation classified by reference level of beliefs that affect driving safety Before and after the experiment

Belief of reference groups	Before (n=200)		After (n=200)	
	Number	Percentage	Number	Percentage
High	41	20.5	90	45.19
Moderate	89	44.34	57	28.44
Low	70	35.06	53	26.38
Total	200	100	200	100
$\bar{X}$±S.D.	1.85±0.33		2.18±0.53	

1.4.2 Comparison of differences in the mean beliefs of reference groups that affect driving safety before and after the experiment, before the experiment, it was found that the experimental group had the mean beliefs of reference groups affecting safety Driving 1.85 The standard deviation 0.33 after the experiment showed that the experimental group had a mean of the reference group which had an effect on driving safety. The standard deviation of 0.53 when comparing the differences in the mean of the beliefs of the reference group that effected on driving safety, it was found that after the experiment, the mean score of the reference group had more effect on driving safety than before. Experiments with statistical significance (p-value 0.01; 95% CI 0.12 to 0.56) as detailed in Table 10.

Table 10 Comparison of differences in mean scores of reference groups affecting the opinions of Safe driving Before and after the experiment

Reference groups	$\bar{X}$	SD	95%CI		t	p-value
before	1.85	0.33	0.12 to 0.56		3.49	0.01
after	2.18	0.53				

1.5 Questionnaire for self-control in driving Before and after the experiment

1.5.1 You choose the time to drive the car during a traffic jam, not a lot of cars, found that most before experiment was 65% confident, and after most of the experiment was 87.5% confident

1.5. 2 When driving, you control the traffic rules. Without having to control from anyone, found that most of the experiment are very confident 75% and after most of the experiment was very confident 80%

1.5.3 You will accidentally drive fast Always exceeded the law, found that most before the experiment was 65% less confidence and after most of the experiment 85% less confidence

1.5.4 You control yourself not to drive faster than 80 km / h. Before the experiment, most were confident about 45 percent and after the experiment, most were confident about 86 percent.

1.5.5 Whether or not has a policeman, you can always choose to drive safely. It is found that before most experiment was confident 55% and most of them after 90%

1.5.6. The ability to determine the duration of the drive, not too long each time found that before the experiment most was confident 57% and after the majority of the experiment 76.5% were very confident

1.5.7. When in a stressful or tight situation able to control driving safely, found that before the experiment, most were very confident with 60% and after the majority of the experiment 86.5% were very confident.

1.5.8 Children or family members are always reminded to respect traffic rules, found that before most experiment, at least 55% of confidence and 50% after most of the experiment.

1.5.9 If you have to drive long distances you have to hurry to sleep early. Found that most of the experiment was very confident 60% and after most of the experiment was very confident 63%

1.5.10 If dark, rain or unskilled, you will not drive. The car found Most of the experimenters were confident about 41.5% and after the experiment, most were confident of 53%, details as shown in Table 11.

Table 11 Number and percentage of self-control in driving before and after the experiment

Item	Self-control in driving	before (n=200)		after (n=200)	
		Number	Percentage	Number	Percentage
1	Choosing a driving time during traffic is not jammed.				
	High	50	25	175	87.5
	Moderate	130	65	20	10
	Low	20	10	5	2.5
2	When driving, you control the traffic rules. Without requiring anyone to control				
	High	150	75	160	80
	Moderate	37	18.5	35	17.5
	Low	13	6.5	5	2.5
3	Driving fast Always exceeded the law				
	High	23	11.5	10	5
	Moderate	47	23.5	20	10
	Low	130	65	170	85

Table 11 Number and percentage of self-control in driving before and after the experiment

Item	Self-control in driving		before (n=200)		after (n=200)	
			Number	Percentage	Number	Percentage
4	Self-control to drive faster than 80 km / h					
		High	60	30	172	86
		Moderate	90	45	25	12.5
		Low	50	25	3	1.5
5	Even with the police or not, you can always choose to drive safely.					
		High	110	55	180	90
		Moderate	40	20	15	7.5
		Low	50	25	5	2.5
6	The ability to determine the duration of the drive, not too long each time					
		High	114	57	153	76.5
		Moderate	81	40.5	45	22.5
		Low	5	2.5	2	1

Table 11 Number and percentage of self-control in driving **before and** after the experiment**.(Cont)**

Item	self-control in driving	before (n=200)		after (n=200)	
		Number	Percentage	Number	Percentage
7	When in a tight situation Able to control driving safely				
	High	120	60	173	86.5
	Moderate	60	30	26	13
	Low	20	10	1	0.5
8	Children or family members are always reminded to respect traffic rules.				
	High	30	15	100	50
	Moderate	60	30	55	27.5
	Low	110	55	45	22.5
9	If you have to drive long distances Must hurry to sleep early				
	High	120	60	126	63
	Moderate	45	22.5	67	33.5
	Low	35	17.5	7	3.5
10	If it's dark, It's raining or not expertly. Will not drive.				
	High	83	41.5	106	53
	Moderate	80	40	75	37.5
	Low	37	18.5	19	9.5

1.5.1 Self-control in driving Before and after the experiment

Before the experiment, most of the drivers had a self-control of driving a car in a high level, accounting for 43% and after the experiment, most of them had a self-control of driving a car in a high level. Representing 67.75 percent, details as shown in Table 12.

Table 12 Number, percentage, average value and standard deviation classified by control level Self driving Before and after the experiment

Control level Self driving	Before		after	
	Number	Percentage	Number	Percentage
High	86	43	136	67.75
Moderate	67	33.5	38	19.15
Low	47	23.5	26	13.1
Total	200	100	200	100
$\bar{X}$±S.D.	2.19±0.39		2.54±0.51	

1.5.2 Comparison of differences in the mean of self-control in driving Before and after the experiment, before the experiment, it was found that the experimental group had an average self-control of driving 2.19 standard deviation 0.39. After the experiment, it was found that the experimental group had a self-control average of 2.54 standard deviation of driving. 0.51 When comparing the differences of the mean of self - control in driving, it was found that after the experiment, there is a mean of self-control in driving. Significantly higher than before the experiment (p-value 0.01; 95% CI 011 to 0.59) as detailed in Table 13.

Table 13 compares the differences in the mean scores of self-control in driving a car. Before and after the experiment

self-control in driving a car	$\bar{X}$	SD	95%CI		t	p-value
Before	2.19	0.39	011 0.59	to	3.34	<0.001
after	2.54	0.51				

1.6 Questionnaire driving intentions before and after trial

1.6.1 The intention is to drive no more than 80 km/h. It found that before most experiment were very convincing. 60 percent and after the experiment, most believe. 95%

1.6.2 Intend to take care of oneself to be ready before driving ,finding that before most experiment are very convincing. 93 percent and after the experiment, most believe. 97 percent

1.6.3 Determined to drive the car without causing an accident .It found that before most experiment were very convincing. 94 percent and after the experiment, most believe. 97 percent

1.6.4 Determined that there will be no driving problems. It was found that most before experiment were very confident 91% and after most experiment 95% believe.

1.6.5 Intend to drive by respecting traffic rules, even without police control, found that before the experiment, most were very confident with 95.5% and after the majority of the experiment, with 95% confidence

1.6.6. Intend to check the car's condition before driving .Most of the experiment are very confident with 85% and after most of the experiment, 96% are very confident

1.6.7. Intend to not drink alcohol when driving ,found that before most of the experiment after the experiment were 93.5 percent and after most are confident 95.5 percent

1.6.8 Intend to keep driving as long as they think can drive. It found that before most experiment were very convincing. 83.5 percent and after the experiment, most believe. 89 percent 1.6.9%

1.6.9 Intend to study the route wellwhen driving, finding that before most experiment are very convincing. 85 percent and after the experiment, most believe. 93.5 percent

1.6.10 Intend to not drive long distances between provinces s, finding that before most experiment are moderately convinced. 55.5% and after the experiment, most believe. 84.5% detailed as shown in Table 14

Table 14 Number and percentage of samples Classified by intention of driving before and after.

		before n=200		After n=200	
Item	Intention of driving	Number	Percentage	Number	Percentage
1	The intention is to drive no more than 80 km/h.				
	High	120	60	190	95
	Moderate	70	35	9	4.5
	Low	10	5	1	0.5
2	Intend to take care of oneself to be ready before driving				
	High	186	93	194	97
	Moderate	14	7	6	3
3	Determined to drive the car without causing an accident				
	High	188	94	194	97
	Moderate	11	5.5	6	3
	Low	1	0.5	0	0

Table 14 Number and percentage of samples Classified by intention of driving before and after.

Item	Intention of driving	before n=200		After n=200	
		Number	Percentage	Number	Percentage
4	Determined that there will be no driving problems				
	High	182	91	190	95
	Moderate	16	8	10	5
	Low	2	1	0	0
5	Intend to drive By respecting traffic rules, even without police control				
	High	191	95.5	190	95
	Moderate	9	4.5	10	5
6	Intend to check the car's condition before driving				
	High	170	85	192	96
	Moderate	30	15	8	4
7	Intend to not drink alcohol when driving				
	High	187	93.5	191	95.5
	Moderate	8	4	9	4.5
	Low	5	2.5	0	0

Table 14 Number and percentage of samples Classified by intention of driving before and after.(Cont)

Item	Intention of driving	before n=200		After n=200	
		Number	Percentage	Number	Percentage
8	Intend to keep driving as long as I think I can drive				
	High	167	83.5	178	89
	Moderate	27	13.5	22	11
	Low	6	3	0	0
9	Intend to study the route well when driving				
	High	170	85	187	93.5
	Moderate	30	15	13	6.5
10	Intend to not drive long distances between provinces				
	High	75	37.5	169	84.5
	Moderate	111	55.5	31	15.5
	Low	14	7	0	0

1.6.1 Intention to drive Before and after the experiment

Before the experiment, most of them were willing to drive. At a high level Accounted for 81.8 percent and

after the experiment, the intention of driving is at a high level Representing 93.75 percent, details as shown in Table 15.

Table 15 Number, percentage, average value and standard deviation classified by driving intention level Before and after the experiment

Level of driving intention	Before		After	
	Number	Percentage	Number	Percentage
High	163	81.8	188	93.75
Moderate	33	16.3	12	6.2
Low	4	1.9	0	0.05
Total	200	100	200	100
$\bar{X}$±S.D.	2.79±0.21		2.94±0.04	

1.6.2 Comparison of differences in mean driving intentions before and after the experiment, before the experiment, it was found that the experimental group had the mean score intention of driving 2.79 standard deviation 0.21. After the experiment, the experimental group had the mean of driving intention 2.94 standard deviation 0.04 when Compare the difference of mean driving intention, found that after the experiment has the mean of driving intention Significantly higher than before the experiment (p-value 0.03; 95% CI 0.01 to 0.27) as detailed in Table 16.

Table 16 compares the different mean values of driving intentions. Before and after the experiment

driving intentions	$\bar{X}$	SD	95%CI		t	p-value
Before	2.79	0.21	0.01	ถึง	2.43	0.03
			0.27			
after	2.94	0.04				

1.7 Questionnaire on driving practice of the elderly Before and after the experiment

1.7.1 Driving by themselves on a daily basis, found that before most of the experiment performed regularly 85.5% and after most of the experiment 87% regularly

1.7.2 Always respect the traffic rules , showed that before the majority practice a consistent 94 percent after treatment and most practice a consistent 99 per cent

1.7.3 Driving distance between provinces found that most of experiment performed regularly 55.5 percent after experiment performed regularly were most consistently 75 per cent

1.7.4 Always checking the condition of the car before driving , found that the most practical before experiment were 76.5 and after most experiment were 95 percent.

1.7.5 Driving without speeds exceeding 80 km / h, found that before most experiments were observed consistently. 66% and after most experiment practice regularly 87 percent

1.7.6 Be mindful while driving. Concentrate to prevent accidents, found that before most experiments were observed consistently. 95% and after most experiments practice regularly 99 percent.

1.7.7 The ability to consistently apply brakes , found that before most experiments were observed consistently. 94.5% and after most experiments practice 97 percent

1.7.8 Never confuse using the accelerator or brake. before most experiment performed regularly 84 percent and after most experiment practice 95.5%

1.7.9 Use to safety belt every time driving ,found that most of the experiment were consistent 95% and 96.5% respectively after experimental.

1.7.10 Always learn how to drive safe cars. safely. Mostly before the experiment 91.5% were consistent, and 91% were the most after the regular practice. Details are shown in Table 17

Table 17 Number and percentage of samples Classified by practice in car driving for the elderly

Item	car driving	Before n=200		After n=200	
		Number	Percentage	Number	Percentage
1	Driving by yourself on a daily basis				
	Regular	171	85.5	174	87
	Sometime	26	13	25	12.5
	No	3	1.5	1	0.5
2	Always respect the traffic rules.				
	Regular	188	94	198	99
	Sometime	10	5	2	1
	No	2	1	0	0
3	Distance driving between provinces				
	Regular	70	35	150	75
	Sometime	111	55.5	44	22
	No	19	9.5	6	3
4	Always checking the condition of the car before driving				
	Regular	153	76.5	190	95
	Sometime	44	22	10	5
	No	3	1.5	0	0
5	Driving without speeds exceeding 80 km / h				
	Regular	132	66	174	87
	Sometime	67	33.5	26	13
	No	1	0.5	0	0

6. Be mindful while driving. Concentrate to prevent accidents					
	Regular	190	95	198	99
	Sometime	8	4	2	6
	No	2	1	0	0
7	The ability to consistently apply brakes				
	Regular	189	94.5	194	97
	Sometime	9	4.5	6	3
	No	2	1	0	0
8	Never confuse using the accelerator or brake.				
	Regular	168	84	191	95.5
	Sometime	18	9	9	4.5
	No	14	7	0	0
9	Use to safety belt every time you drive.				
	Regular	190	95	193	96.5
	Sometime	8	4	7	3.5
	No	2	1	0	0
10	Always learn how to drive safe cars.				
	Regular	183	91.5	182	91
	Sometime	15	7.5	15	7.5
	No	2	1	3	1.5

1.7.1 Driving Practice (skills) of the elderly

Before the experiment, the driving performance of most old people was at average level.

At the end of the experiment, the driving performance of most elderly people is at a unified level. Shown in table 18

Table 18 Number, Percentage, Average and Standard Deviation Classified by Driving Practice(Skill) Level of the Elderly Before and after the experiment

Driving Practice	Before		After	
(Skill) In elderly	Number	Percentage	Number	Percentage
Regular	163	81.7	184	92.2
Sometime	32	15.8	15	7.3
No	5	2.5	1	0.5
Total	200	100	200	100
$\bar{X}$±S.D.	2.79±0.21		2.92±0.08	

1.7.2 Compare the mean difference in driving practice of the elderly.

Before and after the experiment, before the experiment, it was found that the experimental group had the mean driving behavior of the elderly 2.79 standard deviation 0.21. After the experiment, the experimental group had the mean of driving behavior of the elderly. Elderly 2.92 Standard deviation 0.08 When comparing the differences, the mean driving behavior of the elderly found that after the experiment, the mean of practice in driving of the elderly Significantly higher than before the experiment (p-value 0.02; 95% CI 0.02 to 0.23) as detailed in Table 19.

Table 19 compares the different mean values of driving behavior of the elderly. Before and after the experiment

driving behavior of the elderly	$\bar{X}$	SD	95%CI		t	p-value
Before	2.79	0.21	0.02 0.23	to	2.73	0.02
after	2.92	0.08				

1.8 Satisfaction with the driving safety enhancement program after the experiment. The results showed that after the experiment Most of the experimental groups were satisfied with the driving safety enhancement program at a high level (mean = 2.85, SD = 0.37). When considering each item, it was found that after the experiment, most of the experimental groups were satisfied with the driving safety enhancement program in the type that you see as a safe driving guide has an average value of 2.87, standard deviation 0.31 is at a high level. Followed by satisfaction with the driving safety enhancement program in the type that you see that participating in the driving safety enhancement program has an average 2.87 standard deviation 0.34 is at the level very As shown in Table 20

Table 20 Average percentage and standard deviation of satisfaction with driving safety promotion program

item	Satisfaction with driving safety promotion program	$\bar{X}$	SD.	Level
1	There are benefits to participating in the project to enhance driving safety.	2.87	0.34	High
2	Hand book for safe driving, good value	2.89	0.31	High
3	Satisfaction in using warning line stickers for good driving safety.	2.83	0.38	High
4	This project should be expanded further.	2.83	0.38	High
5	The driving Handbook contains useful content for safe driving.	2.86	0.35	High
6	The driver's handbook for safe driving has characters that are easy to read.	2.84	0.37	High
7	The driver's handbook for safe driving has easy to understand illustrations.	2.85	0.36	High
8	Line stickers to help enhance driving safety	2.84	0.40	High
9	Line stickers with illustrations, easy to understand	2.85	0.38	High
10	LINE stickers with easy-to-read characters	2.85	0.39	High
	Total	**2.85**	**0.37**	High

2. Discussion of the findings.

After implementation by using sticker line package and handbook for improvement senior people's safety vehicle found that knowledge on safety vehicle driving, attitude toward safety vehicle, belief of reference group, intention, self control and skill for safety vehicle were higher score after implement than before implementation significantly at $p < 0.05$. Therefore it very important to decrease risk of senior people driving by preparing system to increasing skill in various strategies same as many studies.

Female senior people must interesting to concern to practice safety driving. As Foley, Heimovitz, Guralnik and Brock.(2002). Study driving life expectation of persons aged 70 year and older In the United States. *The objectives.* 0f this study estimated total life expectancy and driving life expectancy of US drivers aged 70 years and older. *Methods.* Life table methods were applied to 4,699 elderly persons who were driving in 1993 and reassessed in a 1995 survey. The *results showed that* drivers aged 70 to 74 years had a driving life expectancy of approximately 11 years. A higher risk of mortality among men as a cause of driving cessation offset a higher risk of driving cessation not related to mortality among women that resulted in similar driving life expectancies. Nationwide, many elderly drivers quit driving each year and must seek alternative sources of transportation. Because of differences in life expectancy, women require more years of support for transportation, on average, than men after age 70.

Langford; Koppel; Charlton; Fildes; Newstead.(2006) Study A Re – Assessment of Older Drivers As A Road Safety Risk. Older drivers are frequently viewed as overly represented in crashes, particularly when crash involvement per distance travelled is considered. This perception has led to a call for tighter licensing conditions for older drivers, a policy which inevitably results

in mobility restrictions for at least some drivers. However there is a growing body of research evidence which shows that as a group, older drivers represent no greater road risk than drivers from other age groups once different levels of driving activity are taken into account. This paper has examined aspects of older drivers' fitness to drive based on survey data and off-road and on-road driving performance from a sample of 905 New Zealand older drivers. The results show that policies which target all older drivers and lead to licensing and mobility restrictions cannot be justified from a safety basis.

Training for safety vehicle driving is necessary like Hashimoto, Kato, and Tsugawa, (2009). Study A Cooperative Assistance System Between Vehicle For Elderly Drivers **.** Proposes a new concept of elderly driver assistance systems, which performs the assistance by cooperative driving between two vehicles, and describes some experiments with elderly drivers. The assistance consists of one vehicle driven by an elderly driver called a guest vehicle and the other driven by a assisting driver called a host vehicle, and the host vehicle assists or escorts the guest vehicle through the inter-vehicle communications. The functions of the systems installed on a single-seat electric vehicle are highly evaluated by subjects of elderly drivers in virtual streets on a test track. Increasing of safety among older drivers. Car driving train is necessary. CarFit recommendations may need stronger reinforcement in order to be enacted by a participant. As Jean M. Gaines ' , Kasey L. Burke , Katherine A. Marx , Mary Wagner , John M. Parrish Enhancing older driver safety: (2011): Study a driving survey and evaluation of the CarFit program. The objective of this study : To evaluate CarFit, an educational program designed to promote optimal alignment of driver with vehicle. Methods: A driving activity survey was sent to 727 randomly selected participants living in retirement communities. Drivers (n = 195) were assigned randomly to CarFit intervention (n= 83, M age = 78.1) or Comparison (n = 112, M age = 79.6) groups. After 6 months, participants completed a post-test of driving activity and CarFit recommendations. Results:

Nonconsenting drivers were older and participated in fewer driving activities. CarFit participation was moderate (71%) with 86% of the participants receiving recommendations. 60% followed the recommendations at the 6-month re-evaluation). The CarFit (67.6%) and Comparison (59.3%) groups reported at least one type of self-regulation of driving activity at baseline. There was no significant change in the driving behaviors at the six-month follow-up. Conclusion: CarFit was able to detect addressable opportunities that may contribute to the safety of older drivers. Impact on industry: CarFit recommendations

Most of senior people high confident to safety driving due to long experience and more carefull as Musselwhite and Haddad.(2010). Study exploring older drivers' perceptions of driving. This research uses grounded theory to assess the driving needs of 29 older car drivers using four data collection techniques (two waves of focus groups, an interview and a driver diary). Findings suggest that older drivers view themselves as having better driving skills and attitude towards driving compared to when they were younger and compared to other drivers. In addition, they have a good ability to adapt to their changing physiology. Nevertheless, they report difficulty in assessing their own driving ability and cite they would like help to increase self-awareness about the driving task. In addition, the participants report having increasing difficulty in not having enough time to read, compute and comprehend road signs, maintaining a constant speed at the speed-limit, increased tiredness and fatigue and increased sensitivity to glare. The findings suggest given an iterative, qualitative methodology where driving issues are focused upon, older drivers can become more self-aware of their driving limitations and discuss these aspects in the context of ageing physiology. Overall, it can be seen that the participants viewed themselves as having better driving skills than when they were younger and indeed than many other road users. Despite this, they are aware of a number of failings in their ability, but feel in most cases they are able to overcome and compensate for such behaviours, either through changing driver behaviour (driving slower with increased gaps, for

example) or changing their travel behaviour (not going out at night to avoid glare and luminance issues, not driving in the busiest times to avoid distraction and being over-whelmed by the environment). However, it must be noted that in an ever growing car dependent society, a question for policy makers must be to consider whether older people be able to avoid such situations in the future and the potential consequences this has on road user safety coupled with a growing older person population. Further research is suggested to establish the certainness of these issues, through a larger more representative sample using robust and statistical techniques.

More driving make high experience and skill of driving in senior people as Langford et al , (2013) .Study Findings from the Candrive/Ozcandrive study: Low mileage older drivers, crash risk and reduced fitness to drive.

Previous research has found that only older drivers with low annual driving mileages had a heightened crash risk relative to other age groups. These drivers tend to drive mainly in urban areas, where the prevalence of complex traffic situations increases crash risk. However it might also be that some drivers may have reduced their driving due to perceived or actual declines in driving fitness.

This paper uses Canadian and Australian data from the Candrive/Ozcandrive older driver study to investigate the association between annual driving distances and a set of driving-related factors, including fitness to drive.

All drivers in the Candrive/Ozcandrive older driver cohort study were allocated to one of three groups according to their self-reported annual driving distances: <5,001 km; >5,000 and <15,000 km; and 15,000 km or greater. Relationships between these driving-distance categories and: (a) self-reported crash data; (b) various Year 1 ‘fitness to drive’ performance measures; and (c) self-perceptions of driving ability and of comfort while driving, were determined.

Results confirmed the previously reported association between low mileage and heightened crash risk. Further, low mileage drivers performed relatively poorly on a wide range of performance measures, perceived their own driving ability as

lower, and reported lower comfort levels when driving in challenging situations, compared to the higher mileage drivers. In most instances, these differences were statistically significant.

The paper provides further evidence that the so-called 'older driver problem' is most pertinent to low mileage drivers, and that this is due in part to low mileage drivers tending to have reduced fitness to drive. This higher risk group represented a fairly small proportion of the sample in this study.

Senior people who learn more about his or her own abilities and challenges in driving. It could also help older drivers solve their mobility problems in a safe and ecological way as Esko Keskinen. (2014).Study education for older drivers in the future. Five presumptions have to be considered when addressing future education for older drivers: 1. Driving a car will continue to be one element of mobility in the future; 2. Older people want to be able to keep driving; 3. Safety will be an even more important factor in mobility in the future; 4. Ecological values will be more important in the future; and 5. Innovative technological applications will be more important in the future. Hierarchical models of driving are suitable in increasing understanding of older drivers' needs and abilities. The highest levels of the driving hierarchy in the Goals for Driver Education (GDE) model are especially important for the safety of both young and elderly drivers. In these highest levels goals for life, skills for living, and social environment affect everyday decision making in general but also driving, which has an impact on driver safety. Giving up driving is very much a social decision and should be taken as such. However, the highest levels of the driving hierarchy are by nature in-accessible to teacher-centered instruction These levels require more coaching-like education methods where the learner takes the central role and the teacher helps the drivers understand their own abilities and limitations in traffic. Testing and selecting older drivers to enhance safety is not, according to research findings, working in a proper way. Older drivers do not so much need more information concerning traffic rules, etc., but rather better understanding of themselves, their

health restrictions, their skills, and their abilities to ensure daily mobility. Their closest companions also need tools to help them in discussions of traffic safety issues affecting older drivers. The aim in education for older drivers could perhaps be simplified by saying that it should not be teaching knowledge or skills and teachers should not simply give information to older people. It could be more of a process in mutual understanding where the teacher helps the older driver learn more about his or her own abilities and challenges in driving. It could also help older drivers solve their mobility problems in a safe and ecological way

Senior people who had experience of car accident. They have more attention to concern and be careful of driving as Yasushi Nishida (2015).Analyzing accidents and developing elderly driver-targeted measures based on accident and violation records. This study performed a variety of analyses using the Institute for Traffic Accident Research and Data Analysis' Integrated Driver Database with traffic accident and violation records. The database integrates driver management data and road traffic accident statistics data, making it possible to explore the relationships among driver attributes and road traffic accident characteristics in considerable detail.

By controlling the compilation conditions and refining the sets of driver attributes, The analysis showed that drivers who experience accidents drive more carefully immediately after an accident, revealed high accident rates among drivers who have experienced certain violations, and produced other findings that could constitute a foundation for developing individual driver-targeted measures. Our analysis of large age groups, meanwhile, showed that drivers with a history of numerous accidents or apprehensions/violations are more likely to cause accidents.

Chapter V Conclusion and Recommendation

The is quasi-experimental research data were collected using interview forms before and after the experiment. A small group of 200-69, 70-79 and more than 80 years of age, with 200 people and the data obtained was validated and analyzed using S TATA Version 10 (University Copyright Khon Kaen) presents the analysis results in 2 parts as follows:

1. Research findings

1.1 General information of sample

Sex, which found that the majority of the experimental group was 51.5 percent male, 48.5 percent, respectively,

Age groups were 60-69 years old, 71.5 percent, aged 70-79 and 27 percent, respectively, most had marriage status, 69.5 percent, 15 percent, respectively, had a bachelor's degree of 54.5 percent, 21 percent higher than the bachelor's degree, respectively.

The experimental group had no congenital disease at 50.5% and 49.5% of the chronic diseases, most of which were high blood pressure 64.65%, followed by 22.22% of diabetes, respectively.

Most of them had driven for more than 26 years, 87.5% and retired from government agencies meanwhile had a driver license 97% and no driver license 3%, most never had an accident 94.5% and had an accident 5.5%. They can drive continuously, 76.5%. Most have ever trained to drive safely 53.5% and had trained to drive 46.5%

Most have eye and ear examination checked 56% and 44% did not check. They think that they have influence to drive 59.5%. Most wants to practice driving only percentage 12 and do not want to practice driving, 88 percent.

1.2.Comparison of differences, meanings, and knowledge about driving safety Before and after the experiment, before the experiment, it was found that the experimental group had a mean of knowledge about driving safety 2.62 standard deviation 0.16.After the experiment, it was found that the experimental group had an average of knowledge about safety.

In driving, 2.88 standard deviation 0.17, when compare to the differences in the mean aperture. Regarding driving safety, found that after the experiment, there is an average knowledge about driving safety.Safe driving More than before the experiment with statistical significance (p-value <0.001; 95%CI 0.14 to 0.35).

1.3 Compare the difference of the average attitude towards driving. Before and after the experiment, before the experiment, it was found that the experimental group had an average attitude towards driving 2.44 standard deviation 0.38. After the experiment, it was found that the experimental group had an average attitude towards driving 2.62 Standard deviation 0.55 when comparing the After the experiment, it was found that after the experiment, there was a significantly higher attitude towards driving than before the experiment. Statistical (p-value 0.02; 95% CI 0.03 to 0.31).

1.4 Comparison of differences in the mean beliefs of reference groups that affect driving safety before and after the experiment, before the experiment, it was found that the experimental group had the mean beliefs of reference groups affecting safety Driving 1.85 The standard deviation 0.33after the experiment showed that the experimental group had a mean of the reference group which had an effect on driving safety. The standard deviation of 0.53 when comparing the differences in the mean of the beliefs of the reference group that effected on driving safety, it was found that after the experiment, the mean score of the reference group had more effect on driving safety than before. Experiments with statistical significance (p-value 0.01; 95% CI 0.12 to 0.56).

1.5 Self-control in driving before and after the experiment

Comparison of differences in the mean of self-control in driving Before and after the experiment, before the experiment, it was found that the experimental group had an average self-control of driving 2.19 standard deviation 0.39. After the experiment, it was found that the experimental group had a self-control average of 2.54 standard deviation of driving. 0.51 When comparing the differences of the mean of self - control in driving, it was found that after the experiment, there is a mean of self-control in driving. Significantly higher than before the experiment (p-value 0.01; 95% CI 011 to 0.59).

1.6 Comparison of differences in mean driving intentions Before and after the experiment, before the experiment, it was found that the experimental group had the mean intention of driving 2.79 standard deviation 0.21. After the experiment, the experimental group had the mean of driving intention 2.94 standard deviation 0.04 when Compare the difference of mean driving intention, found that after the experiment has the mean of driving intention Significantly higher than before the experiment (p-value 0.03; 95% CI 0.01 to 0.27).

1.7 Driving Practice (skills) of the elderly

After the experiment, the experimental group had the mean of driving behavior of the elderly. Elderly 2.92 Standard deviation 0.08 When comparing the differences, the mean driving behavior of the elderly found that after the experiment, the mean of practice in driving of the elderly Significantly higher than before the experiment (p-value 0.02; 95% CI 0.02 to 0.23).

1.8 Satisfaction with the driving safety enhancement program after the experiment. The results showed that after the experiment most of the experimental groups were satisfied with the driving safety enhancement program

at a high level (mean = 2.85, SD = 0.37). When considering each item, it was found that after the experiment, most of the experimental groups were satisfied with the driving safety enhancement program in the type that you see as a safe driving guide has mean 2.87, S.D 0.31 is at a high level. Followed by satisfaction with the driving safety enhancement program in the type that you see that participating in the driving safety enhancement program has mean 2.87 S.D. 0.34.

2. Recommendation for research applying

1. Sticker both statistic and dynamic type should distribute for increasing concern for safety driving among senior people.
2. Hand book for safety driving among senior people should send to many organization for safety transportation.
3. Senior people who able to drive should encourage and empowerment for safety driving.

3. Recommendation for further research

1. The confident encouragement for maximum safety on the road should be study.
2. The suitable time for quit driving will be important to study.
3. The context of urban and rural area should be comparison for safety drive.
4. Elderly people with Car and motorcycle should be empowerment for safety driving.

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Questionnaire.

IMPROVEMENT ON VEHICLE SAFETY DRIVING OF SENIOR PEOPLE BY SAFETY EDUCATION PROMOTION

Part 1 Characteristic questionnaire.

Information Please ✓ in ( ) or fill in bracket.

Name – Sure name

……

Address ..... Road ..... Muang district , Khon kaen Province, Thailand.

Date / Month/Year for answer questionnaire .....

1. Age ..... years (Full)
   1) ( ) 60-69 years
   2) ( ) 70-79 years
   3) ( ) > 80 years

2). Sex
   ( ) 1). Female
   ( ) 2) Male

3. Marital status
   ( ) 1. Single ( ) 2. Marry ( ) 3. Divorce ( ) 4. Separate

4. Education
   ( ) 1. No Education ( ) 2. Primary school
   ( ) 3.Junior High School ( ) 4. High School
   ( ) 5. Diploma ( ) 6. Bachelor degree
   ( ) 7. > Bachelor degree (ระบุ.....)

5. Disease (Diagnosis by Doctor)
   ( ) 1. Healthy
   ( ) 2. Sickness (Specifying more than 1 item)
      ( ) 1. Hypertension
      ( ) 2. Diabetes mellitus
      ( ) 3. Heart disease
      ( ) 4. Asthma
      ( ) 5. Cancer
      ( ) 6. Thalasemia
      ( ) 7. Other (.....)

6. Duration of car driving experiences
   ( ) 1. Less than 5 years ( ) 2. 6-10 years ( ) 3. 11-15 years
   ( ) 4. 16-20 years ( ) 5. 21-25 years ( ) 6. 26 years

7. Main occupation
( ) 1. No work ( ) 2. Agriculture ( ) 3. Commerce
( ) 4. Hired ( ) 5. Government/
( ) 6. Retirement .....
( ) 7. Other (.....)
8. Income / month ..... baht
9. car driving license ( ) 1. Have ( ) 2. No have
10. experience of car driving accident within 1 year ( ) 1. No ( ) 2. Yes .....

11. When intent to stop driving a car permanently.
( ) 1. No limit ( ) 2. Within 1-3 years
( ) 3. 5 Within 5 years ( ) 4. Within 10 years
( ) 5. Within 15 years
12. Ever practice for safety driving
( ) 1. Yes ( ) 2. No
13. Ever check up eyes and ears for license driving.
( ) 1. Yes ( ) 2. No never
14. who is influence for your driving.
( ) 1. Spouse ( ) 2. Children ( ) . myself ( ) 4 other…….
15. Need for safety driving practice (If researcher arrangement)
( ) 1. Need ( ) 2. No Need

Part 2 Questionnaire of knowledge for car safety driving

Information Please ✓ choose only one appropriate your idea.

No	knowledge for car safety driving	yes	No	Unknown	Researcher
1*	Speed drive is generally safest to 100 km per hour, or not.				K 1 [ ]
2*	**Driving a car is not necessary to wear a safety belt if experienced?**				K 2 [ ]
3	 Prohibit all types of cars pass into the **install badge. Yes or no**				K 3 [ ]
4*	 **A sign prohibiting left turns and U-turn or not.**				K 4 [ ]
5	 **Is this a sign forbidding parking?**				K 5 [ ]
6	 **Prohibit all types of driving into the** install badge Yes or no				K 6 [ ]
7	 **Do not turn left or not.**				K 7 [ ]
8	**Turning lights By courtesy driving accuracy. We should turn signal before changing lanes at least 30 meters before the turn. Safety on the road or not.**				K 8 [ ]
9*	**Driving through the intersection with traffic lights flashing yellow. The driver must increase the speed of the car and then the bus as soon as yes or no.**				K 9 [ ]
10	**Driving through the intersection with a traffic signal is flashing red. The driver must stop behind the bus stop. When it is safe and does not interfere with traffic. Continue with caution or not.**				K 10 [ ]

No	knowledge for car safety driving	yes	No	Unknown	Researcher
11	**Driving while rain should turn the wipers with the car's speed, and adds greater caution. Do not open the emergency lights along the way?**				K 11 [ ]
12	**When changing lanes or overtaking every car horn or signal lights to give a yes or no.?**				K 12 [ ]
13*	**If you drive slowly, the driver must drive on the left side or right or not.**				K 13 [ ]
14	**The driver who turned to be a hand gesture with the right hand only yes or no.**				K 14 [ ]
15	**The drivers wanted to return to see the traffic signs which allow access to the car and back channels, correct?**				K 15 [ ]

Part 3 Attitude toward car driving.
Information Please ✓ choose only one appropriate your idea.

No	Attitude toward car driving.	Attitude level			Researcher
		Yes	Unsure	No	
1	**Can you also be confident that driving well.?**				A1 [ ]
2	**Have you confidence in the preparation before driving.?**				A 2 [ ]
3	**Can you be confident that driving speed not exceeding 80 km/h.?**				A 3 [ ]
4	**Have you confidence in your physical drive (the ears. The eyes).?**				A 4 [ ]
5	**Do you agree that driving is important and necessary of senior people?**				A 5 [ ]
6	**Did you have to drink alcohol anytime before driving.?**				A 6 [ ]
7	**Do you respect the traffic rules. When driving.?**				A 7 [ ]
8	**Are you sure to be able to drive safely are always secure.?**				A 8 [ ]
9	**You agree that older people should be driving normally.**				A 9 [ ]
10	Do you think **elderly drivers are the cause of the accident.?**				A 10 [ ]

Part 4 Belief of reference group for car driving safety.
Information Please ✓ choose only one appropriate your idea.

No	**Belief of reference group**	**Belief level**			Researcher
		High	Moderate	Low	
1	People in your family Encourage your car driving				B1 [ ]
2	The family also need your car driving.				B2 [ ]
3	**You see that the elderly driver. increase the anxiety of family.**				B3 [ ]
4	**The family will check the availability of your car.**				B4 [ ]
5	**The seats come with help remind you to drive carefully.**				B5 [ ]
6	**The family want you to quit driving.**				B6 [ ]
7	**The family keeps driving for you. More than need you drive yourself**				B7 [ ]
8	**Someone in your family you may not drive the car is strictly prohibited.**				B8 [ ]

Part 5 Self – control to car drive safety.
Information Please ✓ choose only one appropriate your idea.

No	Self-control to drive a car.	The level of self control.			Researcher
		High	Moderate	Low	
1	You drive a car during a traffic jam did not have much.				SC1 [ ]
2	When driving. You control the traffic rules, Without anyone to control.				SC2 [ ]
3.*	You're driving fast Always exceeding the legal limit				SC 3 [ ]
4.	Discipline yourself not to drive faster than 80 km / hour.				SC 4 [ ]
5.	Although having the police whether or not you can always drive safely.				SC 5 [ ]
6.	You can set the duration of driving. Not too long each time.				SC 6 [ ]
7.	When in a tight situation, You can control for safe driving.				SC 7 [ ]
8	You need family members , Always reminds to respect traffic rules.				SC 8 [ ]
9	If you have to drive a long distance You'll have to hurry to bed early.				SC 9 [ ]
10	If dark, rain or no expertise of road, You will not drive				SC 10 [ ]

Part 6 Intention for car driving

Information Please ✓ choose only one appropriate your idea.

No	Intention for car driving	Intention level			Researcher
		High	Moderate	Low	
1	**You intend to drive no more than 80 Km/hour**				I1 [ ]
2	**Do you intend to take care of yourselves physically to be ready before driving.?**				I2 [ ]
3	**Your were determined to be driving without an accident.**				I3 [ ]
4	**You determined that there will be no problems in driving.**				I4 [ ]
5	**Do you intend to drive By respecting traffic rules, even without police control.?**				I5 [ ]
6	**You intend to check the car before driving.**				I6 [ ]
7	**You were determined that would not consume alcohol when driving.**				I7 [ ]
8	**You intend to try to drive the car as long as you think you can.**				I8 [ ]
9	**You intended to study the route when driving**.				I9 [ ]
10	**You were determined not to drive long distances. between provinces**				I10 [ ]

Part 7 Questionnaire for practice of car driving

Information Please ✓ choose only one appropriate your idea.

No	Practice of car driving	Level of Practice			Researcher
		Regular	Some time	No	
1	**You drive yourself on a daily life.**				P1 [ ]
2	**You always respect traffic rules**				P2 [ ]
3	**You drive long distances between provinces**				**P3 [ ]**
4	**You always check up the condition of car before driving.**				**P4 [ ]**
5	**You drive a car speed in excess of 80 Km/ per one hour.**				**P5 [ ]**
6	**While driving you have a consciousness. Focused to prevent accidents.**				**P6 [ ]**
7	**You can apply the brakes Appropriately while driving**				**P7 [ ]**
8	**You have never confused on the use of the accelerator or the brakes.**				**P8 [ ]**
9	**You use seatbelts every time driving.**				**P9 [ ]**
10	**You learn how to drive car safety.**				**P10 [ ]**

Part 8 Satisfaction of car driving (Post test only)

Information Please ✓ choose only one appropriate your idea.

No	Satisfaction of car driving	Satisfaction of driving			Researcher
		High	Moderate	Low	
1	**You agree that car driving hand book . Readable, easy to understand.**				S1 [ ]
2	**Car driving Handbook are literally right.**				S 2 [ ]
3	**Car driving Handbook illustrations, easy to understand.**				S 3 [ ]
4	**Car driving Handbook has useful content to drive safely.**				S 4 [ ]
5	**Car driving Handbook, suitable book .**				S 5 [ ]
6.	**Car driving Handbook , good value.**				S 6 [ ]
7.	You satisfy to use line sticker for warning to safety driving.				S 7 [ ]
8.	sticker line assist to safety driving.				S 8 [ ]
9.	**Sticker line, There are easy-to-understand illustrations.**				S 9 [ ]
10.	**Sticker line, easy-to-read letters/font.**				S 10 [ ]
11	**You agree that your participation enhance driving safety with benefit.**				S 11 [ ]
12	**I agree that this project should continue to extend further.**				**S 12 [ ]**

1.Other suggestions about the hand book.....

2.Other suggestions about ทsticker line.....

.....

Thanks so much
Assoc.Prof.Dr.Chulaporn Sota

Picture

Hand book distribution





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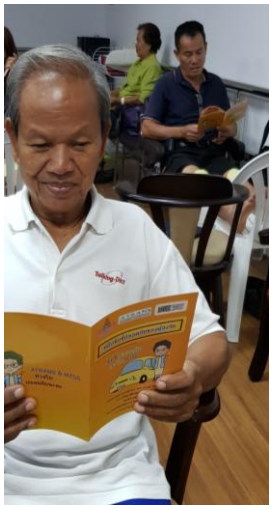
Hand book and sticker line for safety driving

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Final Report

Research Grant 2019

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