

AN EVALUATION OF THE EFFECTIVENESS OF PRIVATE VEHICLE INSPECTION PROCESS IN THAILAND

Pichai TANEERANANON
Associate Professor
Department of Civil Engineering
Prince of Songkla University
Kanchanawanich
Songkhla, Thailand 90112
Fax: +66 74 446519
E-mail: pichai.t@psu.ac.th

Taweesak CHANWANNAKUL
Research Associate
Department of Civil Engineering
Prince of Songkla University
Kanchanawanich
Songkhla, Thailand 90112
Fax: +66 74 446519
E-mail: for_tug@yahoo.com

Verayuth SUANPAGA
Lecturer
Department of Civil Engineering
Kasetsart University
Bangkok, Thailand 10900
Fax: +66 25 792887
E-mail: fengwys@ku.ac.th

Theerachai KHOMPRATYA
Research Associate
Department of Civil Engineering
Khon Kaen University
Khon Kaen, Thailand 40002
Fax: +66 43 202846
E-mail: t_khompratya@yahoo.com

Nopadon KRONPRASERT
Research Associate
School of Civil Engineering
Asian Institute of Technology
Patumthani, Thailand 12120
Fax: +66 25 245506
E-mail: k_nopadon@yahoo.com

Yordphol TANABORIBOON
Professor
School of Civil Engineering
Asian Institute of Technology
Patumthani, Thailand 12120
Fax: +66 25 245506
E-mail: yord@ait.ac.th

Abstract: Traffic accidents are a leading cause of deaths in Thailand. Over the last three years, some 13,000 human lives have been lost annually as a result of road accidents. Losses in terms of economic, social and public health costs have risen over 100 billion baht (US\$2,500) during the period (Police Lieutenant Colonel Dr. Thaksin Shinawatra Thai Prime Minister, WHO 2004). Traffic accidents can be viewed as a chain of events involving the failure of one or more of the following factors: the road user, the vehicle and the road. Research on traffic accidents in the USA and United Kingdom has shown that one of the significant factors causing road crashes was vehicle defects; this factor contributes 12% and 8% respectively to motor accidents in the two countries (Ogden 1996). The statistics for Thailand showed that vehicle defects accounted for some 27.54% of road accidents (OCMLT 2002). In view of the foregoing findings, inspecting vehicles to guard against vehicle defects can be an effective and proactive measure to help prevent road crashes. This study describes the result of an evaluation of vehicle inspection effectiveness in Thailand. The study aims to identify ways of improving the vehicle inspection process currently in use in the country.

Key Words: Traffic Accident, Vehicle Inspection, Vehicle Defects

1. INTRODUCTION

This study reports the findings of a nation-wide evaluation of the performance of private vehicle inspection centres focusing on the areas of safety and inspection method with the aim of raising the effectiveness of the existing inspection standard. It is part of an effort to enhance the competence of inspection centres in terms of their practices, and to establish the confidence in the process and performance of vehicle inspection. The methodology used in the study involves : interview with Department of Land Transport officials in the sampled provinces, the heads of provincial land transport offices, technical persons and mechanics; interview with 25% of private inspection service providers in each of the four sampled provinces; interview with 2500 users of these inspection services; on road random checks of 2,500 vehicles; deployment of 16 'phantom' vehicles with certain defects for inspection by service providers and re-inspection of these vehicles by Provincial Land Transport Offices. The interviews, random checks and controlled inspections were conducted in the provinces of Bangkok, Khon Kaen, Chiang Mai and Songkhla; these are major urban centres representative of the four regions of Thailand. The paper recommends ways of improving the inspection process based on the principles of good governance.

2. VEHICLE INSPECTION PROCESSES IN OTHER COUNTRIES

Vehicle inspection has been mandatory for decades in developed countries where motorized vehicles are inspected to ensure not only their road worthiness but also to reduce pollution from engine emission.

2.1 The United States of America

Vehicle inspection practices in the US vary according to state laws. In 26 states where vehicle inspection is compulsory (U.S. Department of Transportation 2003), it is performed by an authorized inspection station. In some states emission tests are also conducted along with mechanical safety checks (Texas Department of Public Safety 2004). Inspection is also mandatory for transactions involving vehicle registration and transfer of ownership. Some states, Ohio for example (Ohio State Highway Patrol 2003), also choose to conduct random vehicle examination of vehicles on the highways (Figure 1).



Figure 1. Vehicle Inspection Station in USA (District of Columbia Department of Motor Vehicle 2003)

2.1.1 Example of US Braking Test Methods

Braking efficiency is a key feature in vehicle roadworthiness. This section describes the Stopping Distance Method used in the USA.

- Braking tests employed in USA -- Stopping Distance Method (Dynamometer if available)
Bring vehicle to the speed of 20 mph (32 km/h), apply the brakes firmly, without causing the wheels to lock up. Observe if the vehicle comes to a smooth stop within the distance prescribed by applicable law(s) without pulling to the right or left beyond the limits (AAMVA and CCMTA 1999) (Figure 2).

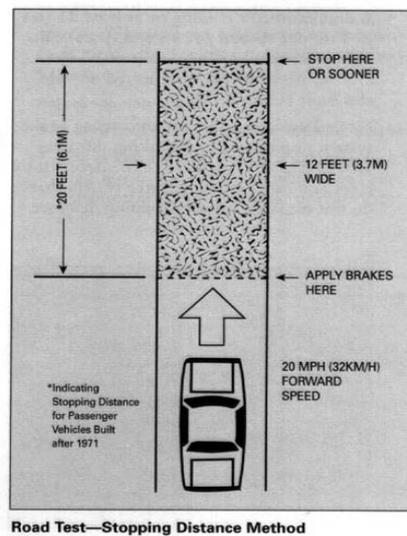


Figure 2. Stopping-Distance Test

2.2 Canada

The Canadian inspection practices are similar to those of the United States. Vehicles are inspected to ensure they meet Canadian safety standards before being allowed to operate on the road (Saskatchewan Department of Highways and Transportation 2001). Inspection is mandatory in these 7 out of 10 states and 3 territories: Manitoba, Ontario, Saskatchewan, Nova Scotia, Newfoundland, New Brunswick and Prince Edward Island.

2.3 Singapore

Three main private contractors are licensed to operate vehicle inspection in Singapore (ADB 1997). The inspection standard in use in Singapore is rigorous and imposes a very strict testing routine involving some 63 inspection items for cars and 61 checks for motorcycles (Figure 3). Inspection notices are issued by the Singapore Land Transport Authority to vehicle

owners three months before the road tax expires. Vehicle owners can book a date for inspection via the Internet. Figure 4 shows frequencies of and fees for inspection.



Figure 3. Singapore's Vehicle Inspection Centre

Frequency of Inspection

Vehicle Types	Frequency			Inspection Fees	
	<3 years	3-10 years	>10 years	First Inspection	Subsequent Inspection
Motorcycles & scooters	NA	Annually	Annually	S\$15	S\$8
Cars & stationwagons	NA	Biennially	Annually	S\$54	S\$27
All tuition cars	Annually	Annually	Annually	S\$54	S\$27
Private hire cars	NA	Biennially	Annually	S\$54	S\$54
Taxis	6-monthly	6-monthly	NA	S\$54	S\$27
SBS buses	6-monthly	6-monthly	6-monthly	S\$60	S\$30
TIBs buses	6-monthly	6-monthly	6-monthly	S\$60	S\$30
CSS buses	6-monthly	6-monthly	6-monthly	S\$60	S\$30
Other buses	Annually	Annually	Annually	S\$60	S\$30
Light goods vehicles (MLW <3,000 kg)	Annually	Annually	6-monthly	S\$54	S\$27
Heavy goods vehicles (2 axles)	Annually	Annually	6-monthly	S\$60	S\$30
Heavy goods vehicles / buses / trailer with prime mover (>2 axles)	Annually	Annually	6-monthly	S\$65	S\$35
Trailers	Annually	Annually	Annually	S\$50	S\$25

Figure 4. Singapore's Vehicle Inspection Frequencies and Fees (Getforme 2004)

2.4 Japan

All motorized vehicles in Japan are required to pass inspection tests designed to ensure mechanical safety, improved road operation and energy saving, and to prevent pollution. Major types of inspection are as follows (Ministry of Land, Infrastructure and Transport Government of Japan 2003):

- Initial Inspection
- Renewal Inspection
- Modification Inspection
- Reassembling Inspection
- Preliminary Inspection

2.5 United Kingdom

Vehicle inspection has been in operation for decades. Inspection centres are owned and operated by the government. Owners of large vehicle fleets may establish their own inspection centres where testing is conducted by the government officials (ADB 1997). The UK inspection standard is rigorous and includes checks on vehicular safety and emission levels. Testing frequency varies by type and operating mode: yearly inspection for small passenger cars aged over three years; similarly for public transport vehicles and taxis aged over one year (VIA 2003).

2.6 Australia

New South Wales is the only state in Australia that imposes mandatory vehicle inspection. Light vehicles and motorcycles aged over 3 years are required to be inspected annually; public passenger vehicles are required to submit to tests every 6 months; used vehicles must pass the tests before a transfer of ownership can be transacted. Figure 5 shows a report of vehicle testing.

Figure 5. New South Wales Vehicle Inspection Report (pink slip)

In summary, frequency of vehicle inspection varies among countries but most require annual test after an initial grace period of 3-4 years for new vehicles, except for Thailand which entertains a grace period of 7 and 5 years for new private vehicles and motorcycles respectively (see Table 1).

Table 1. Frequency of Vehicle Inspection

Country	First testing begins after(years)		Renewal (years)	
	Private Vehicle	Motorcycle	Private Vehicle	Motorcycle
USA ¹	4	4	1	1
CANADA ²			1	1
FRANCE	4	4	2	2
UK	3	3	1	1
AUSTRALIA	3	3	1	1
SINGAPORE	3	3	2	1
JAPAN	3	3	2	2
THAILAND	7	5	1	1

¹ Information form New Hampshire Department of Justice 2003

² Information form Saskatchewan Department Highways and Transportation 2001

3. VEHICLE INSPECTION PROCESS IN THAILAND

The Department of Land Transport has established regulations for vehicle inspection requiring all motorized vehicles to submit to tests as follows: Private passenger cars, pickups and vans aged over seven years, and motorcycles aged over five years, are required to pass an annual inspection before vehicle registration renewal is allowed. The DLT has authorized the task of inspection to private inspection centres throughout Thailand. The measure, which has established a nationwide vehicle inspection process, is in line with the government policy that aims to make motorists more responsible for the safety of their vehicles. The outsourcing of vehicle inspection to the private sector has also helped to reduce government spending and labour associated with vehicle testing. Vehicle inspection has also contributed to a reduction in the number of unsafe and polluting vehicles (DLT 2000). Since the DLT's adoption of private-sector inspection policy in 1994, some 2,048 private inspection centres have been established across Thailand.

3.1 Legislatures Governing Vehicle Inspection

- a. Vehicle Inspection under the Land Transport Act
- b. Vehicle Inspection under the Motor Vehicle Act

3.2 Inspection Fees

- a. Motorcycle: 60 baht (1.5 US\$)
- b. Light Vehicle under 1600 kg: 150 baht (3.75 US\$)
- c. Light Vehicle over 1,600 kg: 250 baht (6.25 US\$)

3.3 Equipment Required of a Vehicle Inspection Centre

A private inspection centre is required to have the following testing equipment:

- a. Headlamp Testing Device (Figure 6)
- b. Exhaust Emission Testing Device
- c. CO and HC Gas Analyzing Device
- d. Sound Level Testing Device
- e. Tachometer
- f. Garage Pit or Hydraulic Lift



Figure 6. Headlamp Testing Device

3.4 Example of Thailand Braking Test Method

Braking tests specified by Department of Land Transport is given in Table 2 (DLT 2001)

Table 2. The Effective Brake Test Method

Procedure	Reject if	Remark
<p><u>Brake effectiveness</u></p> <p>1. Bring vehicle to a speed; then apply the brakes firmly (foot or hand brake as the case may be).</p> <p>2. Test both the hand and foot brakes according to prescribed procedures</p>	<p>1. Hand brake or foot brake fails to stop the vehicle within the required distance.</p> <p>2. Hand and foot brakes fail the standardized tests</p>	<p>Hand and foot braking tests are to follow the procedures established by the Department of Land Transport regulations.</p> <p>(The procedures have yet to be established)</p>

5. FINDINGS OF THE STUDY

5.1 Inspection Service Providers

- Inspection service centres fall into three types as follows: Solely for vehicle inspection service; inspection as an adjunct service of major automobile maintenance centres, and inspection as an adjunct service of small repair garages (Figure 7).



Figure 7. A Typical Solely for Vehicle Inspection Site

- Some vehicle owners resort to get around the actual inspection tests by buying forged inspection certificates from sources such as small providers of registration renewal or insurance services, or from private individuals. Forged inspection certificates are readily available – even right within the premises of some provincial DLT depots.
- Testing is not conducted to the required standard.
- Poor distribution of private inspection centres in the provinces. Most of them are concentrated in major urban areas. Many are situated near provincial land transport offices.
- Only a few items of insignificant checks are performed, such as engine ID, and body paint, while the key safety features are overlooked, such as brakes, tyre treads, headlights. As a result, most of the inspection checks are performed in very short term, testing only 10 to 20 minutes per vehicle.
- Investment returns. Operators are divided into two groups according to the returns on their investment in the testing facilities. Those who considered the investment very worthwhile the “very worthwhile” group includes those providers who derive significant returns from their facilities, gaining an expanding clientele for their operation. An average of 48% of the inspection service providers interviewed come under this group. The “less worthwhile” group includes those operators whose performances have been burdened with rising costs of equipment and rent while being shunned by vehicle owners who prefer to take their vehicles for inspection elsewhere to avoid a stringent testing routine.

Table 3. Investment Return of Inspection Centres

Province	Investment worthiness (%)	
	Very worthwhile	Less worthwhile
1. Bangkok	30	70
2. Chiang Mai	70	30
3. Songkhla	30	70
4. Khon Kaen	60	40

5.2 Users of Inspection Service

- Nearly 80% of the users recognize the need to have their vehicles inspected. Some 70% of the respondents have no knowledge of the items required to be inspected. And nearly 50% of them have no confidence in the inspection process, citing as the reason the “too short” duration of testing and the “too small” number of checked items, which they felt were incommensurate to the money they have to pay (Figure 8 and Table 4). The inspection centres operated by major automobile maintenance centres are perceived to be more reliable in terms of testing standard and effectiveness.
- User satisfaction with inspection service is based on the following criteria: the number of testing items, the thoroughness of and quality of inspection, and service fees. It should be noted that despite the satisfaction level, most of the users have low confidence when it comes to the effectiveness of inspection.



Figure 8. User Bringing a Car for Inspection

Table 4. User Satisfaction versus Confidence in Private Inspection Service

Satisfaction	Trust that inspection is completed as per checklist				Total Percent
	Good	Fair	Low	No trust	
Highest (7.8)	65.6	29.0	5.4	0.0	100.0
High (68.4)	6.3	55.5	11.9	26.3	100.0
Low (21.3)	1.7	34.5	28.8	34.9	100.0
Lowest (2.5)	0.0	11.1	33.3	55.6	100.0

- Suggestions and comments from users of private inspection service
 1. Vehicle testing standard should be improved. Inspection tests should be thoroughly performed and the inspector should advise the vehicle owner about the test checklist. A test report should be provided to the vehicle owner.
 2. Testing fees should be controlled to ensure fair pricing. Some inspection centres add VAT to their testing charges, thereby increasing the prices.
 3. Representatives or officials of DLT should conduct periodic checks on the performance of the private inspection centres and where performances are lacking

remedial measures should be imposed. Unscrupulous practices, including the issuance of certificates without actually conducting tests, should be controlled and penalized.

4. DLT should actively publicize the benefits of vehicle inspection to create better understanding of the process among vehicle users.

5.3 Land Transport Officials

- About 75% of the DLT officials interviewed agree that mechanically defective vehicles are a cause of road accidents. About 70% of them believe that private inspection centres do play a key role in the reduction of accidents provided they are operated effectively.
- However, most of the officials concede that, the effectiveness of the private inspection centres has been low as a result of over-emphasis on profitability rather than on improving the skills of their technicians.
- The effectiveness of the private inspection centres should be upgraded in terms of technical competence and equipment. Their operation should be routinely monitored and random performance checks should be conducted.

5.4 Random Vehicle Checks

- The five mechanical defects of motorcycles detected most frequently are non-functioning horn, turn indicators, side-view mirror, brake lights and hand-brakes (Figure 9). These defects are shown with their occurrence frequencies in Figure 10. The occurrence of defective horns is found most frequently in Bangkok (13%) and Songkhla (20%); and that of defective rear-view mirrors in Khon Kaen (25%), and Chiang Mai (9.8%).



Figure 9. Motorcycle without Tail-lights and Rear-view Mirror

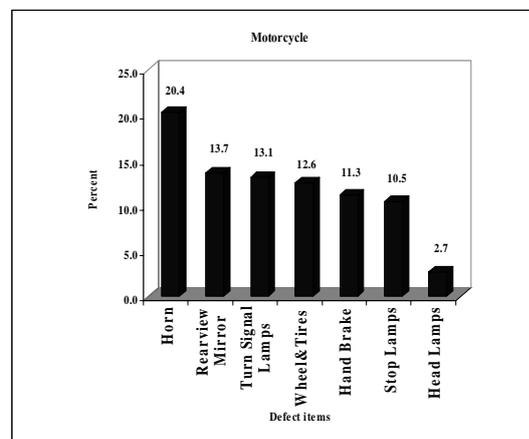


Figure 10. Proportion of Defective Motorcycle Components Tested During Random Road Checks in Songkhla

- Commonly found defects on private sedans and pickup trucks include worn-out tyres, damaged brake lights, windshield wipers, seatbelts and reversing lights (Figures 11 and 12).



Figure 11. Light Truck with Defective Tail Lights

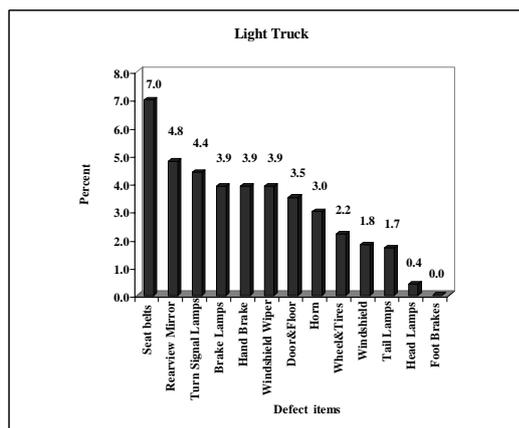


Figure 12. Proportion of Defective Light Truck Parts Tested During Random Road Checks in Bangkok

- Data collected by the study team indicates that 11% of the motorcycles, 3% of private sedans and 5% of private trucks are being operated with outdated (i.e. invalid) registrations. The implication of this finding is two-fold: DLT is deprived of the portion of annual registration taxes due from the owners upon registration renewal; and the safety of such vehicles may be compromised as the vehicles have not been inspected for more than at least a year.

5.5 Inspection of Sample “Phantom” Vehicles

In order to evaluate the “routine” modus operandi of the inspection centres, a number of sample vehicles, each one with certain defects were submitted to testing by selected private inspection centres and the test results were tabulated in Table 5 below. It can be seen that a high percentage (63 to 90 percent) of the samples passed the tests; in particular, private sedans scored a high pass rate of 90% in every city.

Table 5. Pass Rate of Tested Vehicles by Province

Province	Pass Rate of Sample Vehicles (%)			Average
	Pickup	Sedan	Motorcycle	
1. Bangkok	93	90	87	90
2. Chiang Mai	90	90	80	87
3. Songkhla	70	90	75	78
4. Khon Kaen	50	90	50	63

- After passing the tests at these selected inspection centres, the sample vehicles were re-tested at the facilities of Provincial Land Transport Offices and those of high-quality private vehicle inspection centres in Bangkok. All of the samples failed the second round of testing. This indicates a vast discrepancy among the testing standards employed by the various inspection centres (Figures 13, 14).

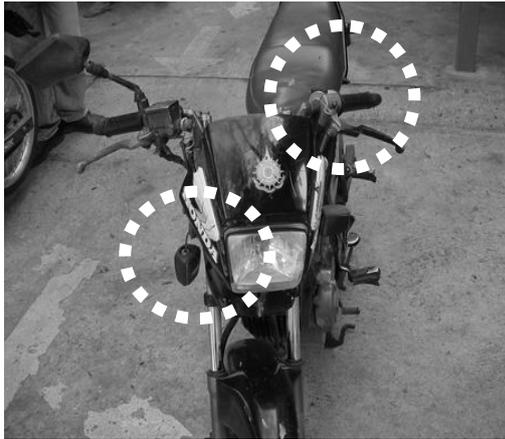


Figure 13. Defective Motorcycle Sample

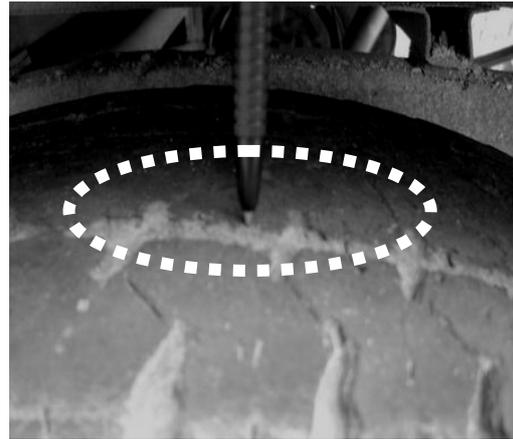


Figure 14. Defective Tyre Tread of Light Truck

- The duration of “inspection” performed on motorcycles and sedans was observed to range from one minute (no test performed; the inspectors merely jotted down the engine ID number) to 5 minutes. For pickup trucks, the inspection duration varies by provinces as follows: Bangkok, 1 to 5 mins; Chiang Mai and Songkhla, 6 to 10 mins; and Khon Kaen, 21 to 30 mins.
- By observing the performance of a number of inspectors, the study team found that as few as one to five items were actually checked by them that are not related to safety, for example: engine ID number, body ID, body colour (these were matched against the records in the vehicle registration book), testing emission gasses CO and HC. Little attention was paid to checking the safety features of the vehicles (Figure 15).



Figure 15. Technician tracing the vehicle identification number

5. SUGGESTIONS AND RECOMMENDATIONS

Based on findings of the investigation, the study team proposes a development strategy for upgrading the performance standards and the effectiveness of private inspection centres. The proposed strategy entails a range of measures designed to achieve good governance as promoted by the United Nations (UNESCAP 2004) in the inspection process (Figure 16).



Figure 16. Elements of Good Governance

5.1 Effective and Efficient

- Department of Land Transport should arrange periodic training seminars for inspectors and inspection centre owners in order to enhance their awareness of a proper inspection process and the role of inspection in the effort to reduce road accidents.
- DLT should carry out routine checks on the performance of private vehicle inspection centres in terms of testing skill, equipment and standard of care.
- The inspection service package should be modified to heighten its safety aspect. Even though the current service package is inadvertently time-efficient, it is not effective in terms of vehicular safety.

5.2 Transparent and Accountable

- Private inspection centres should not be allowed to conduct the dual business of inspection and sale of road victim protection insurance certificate. The two activities should be separated.
- The completed inspection report should be provided to the vehicle owner.

5.3 Participatory

- The vehicle owner user should be informed of the importance of inspection including the process and method of inspection.

5.4 Follows the Rules of Law

- The number and qualification of the technician and inspection supervisor should comply with relevant regulations.
- Each and every item on the inspection checklist (currently 25 items) should be properly completed.

5.5 Future Developments

- Develop practicable and effective braking tests.
- Consider shortening the inspection grace period for new vehicles. For private sedans and pickups, the current grace period of 7 years should be cut to 4; that of motorcycles, from 5 to 3 years.
- Adjust the fee level of inspection service to match prevailing economic climate and to achieve fair pricing for service users and providers alike.
- Random vehicle checks should be conducted. DLT may outsource this task to selected private operators. Private inspection centres found to have been negligent or unscrupulous in their inspection testing should be penalized. Vehicle owners failing to meet their vehicle inspection schedules should also be penalized.
- DLT should aim to establish at least one highly competent inspection centre in every province.
- Two safety helmets should be required of every motorcycle owner; one for the driver and the other for the pillion rider. Inspection of the helmets should be made mandatory.

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