

**Legislative Council Panel on Transport**

**Report on Franchised Bus Operators' Review of  
Arrangements to Enhance Safety of Franchised Bus Operation**

**PURPOSE**

Legislative Council (“LegCo”) Panel on Transport was last briefed in November 2003 (LC Paper No. CB(1)406/03-04(04)) on the measures to ensure the safety of franchised bus operation and that Transport Department (“TD”) had asked franchised bus companies to conduct a review on their safety arrangements and areas where further enhancement to road and passenger safety could be made. This paper informs Members of the major findings of the review and the recommended measures to further enhance bus safety.

**BACKGROUND**

2. TD asked the franchised bus operators in late October 2003 to conduct a review on their safety arrangements to enhance safety of franchised bus operation.

3. All the five franchised bus operators have submitted their review reports. The review covered the following areas:

- (a) analysis of correlation between bus accidents and drivers’ age, experience and working hours;
- (b) driver training;
- (c) driver working schedule;
- (d) installation of safety devices and measures to monitor driving behaviour;
- (e) vehicle examination; and
- (f) measures to promote safety awareness of drivers and passengers.

4. In considering the operators’ review reports, TD has taken into account the recommendations made by the Tuen Mun Road Traffic Incident Independent Expert Panel (“IEP”) and comments expressed by LegCo Members and Transport Advisory Committee members during earlier discussions on the subject.

## MAJOR FINDINGS

5. The franchised bus operators and TD have analyzed the bus accident records and have the following major observations:

(a) franchised bus operation has a relatively stable safety record. In the past five years, there was in general a downward trend in the number of bus accidents per million km operated and most of them were slight accidents.

Annex A

Details are set out in Annex A;

(b) no direct correlation is identified statistically between bus accident rates and drivers' age, years of service and working hours as depicted at Annexes B, C and D respectively; and

Annexes  
B, C & D

(c) driver factor contributed to about one-third of the bus accidents involving injuries in 2003. Passengers not holding handrails tight was also one of the major causes of personal injuries in bus accidents. The driver contributory factors of the accidents are set out in Annex E.

Annex E

## RECOMMENDED MEASURES

6. In the light of the above observations and as continuous efforts to provide better services, the bus companies have suggested additional measures with a view to further enhancing the safety of franchised bus operation. Details are given in the following paragraphs.

### Driver Age and Experience

7. At present, it is a mandatory requirement for all motorists aged 70 or above to undergo medical checks before they are allowed to renew their driving licences. As for the franchised bus companies, Citybus Limited (“CTB”), New World First Bus Services Limited (“NWFB”) and New Lantao Bus Company (1973) Limited (“NLB”) require their drivers aged 50 or above to undergo annual medical examination while Kowloon Motor Bus Company (1933) Limited (“KMB”) and Long Win Bus Company Limited (“LW”) do not have similar requirement. While the bus accident analyses do not indicate any direct correlation between accident rate and drivers’ age, KMB and LW have agreed to consult their unions on the

introduction of annual medical check for drivers aged 50 or above in line with the practice adopted by the other franchised bus companies.

8. Although analyses do not show any correlation between bus accident and drivers' experience, the operators would assign new bus drivers to serve in "simpler" routes in their first few months of appointment to help them to familiarize with franchised bus operation.

### **Bus Driver Training**

9. All franchised bus operators provide various training programmes for their drivers including:

- (a) **training course for new drivers** ranging from a few days to four weeks depending on the driving qualifications the trainees possess. A trainee driver must pass the driving tests set by TD before he/she is allowed to drive a bus for hire unless he/she has already obtained a public bus driving licence;
- (b) **one to two-day enhancement/refresher training for incumbent drivers** to reinforce concepts of road safety awareness, driving skills and manners including defensive driving technique; and
- (c) **special/remedial training** for drivers who are found to have driving irregularities and those who have been away from driving duties for a relatively long period due to sickness or other reasons.

10. TD considers that driver training currently provided by the franchised bus operators is generally adequate and comprehensive. The franchised bus companies agreed to further enhance the training by sending drivers to attend the "Quality Driver Instructor Course" to be organized by TD. They also undertook to regularly review the content of the training courses in the light of changing traffic environment, passenger requirements and accident/operation records. In view of the increase in the number of accidents involving passengers falling within bus compartment in recent years, the operators have agreed to strengthen training on proper driving manner, e.g. not to apply the brake abruptly.

## **Bus Driver Working Schedule**

11. TD has introduced a set of voluntary guidelines on working schedule for bus drivers in early 1980's. The guidelines were last reviewed in March 2000 and are listed below:

- Guideline A Bus drivers should have a break of at least 30 minutes after 6 hours of duty and within that 6-hour duty, the drivers should have total service breaks of at least 20 minutes;
- Guideline B Maximum duty (including all breaks) should not exceed 14 hours in a day;
- Guideline C Driving duty (i.e. maximum duty minus all breaks of 30 minutes or more) should not exceed 11 hours in a day; and
- Guideline D Break between successive working days should not be less than 8 hours.

12. According to TD's recent research on overseas practices as set out in Annex F, the length of maximum duty of bus drivers ranges from 9 hours to 16 hours per day; the maximum driving duty from 7 to 13 hours per day; and the minimum rest period between working days from 8 to 12 hours. TD's current guidelines lie within the aforesaid ranges.

13. TD and the franchised bus operators have jointly reviewed the working hours of their drivers. It is found that:

- (a) all franchised bus operators except NWFB were able to fully comply with the guidelines; and
- (b) NWFB fully complied with Guidelines B and D while the rate of compliance with Guidelines A<sup>1</sup> and C<sup>2</sup> in the second half of 2003 were 94% and 88% respectively. NWFB will take action as explained in

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<sup>1</sup> The non-compliance with Guideline A was mainly due to the overnight shifts in which drivers usually had a rest after each trip, but not a break of 30 minutes after 6 hours of duty, since the maximum length of driving duty in overnight shifts was usually less than 7 hours.

<sup>2</sup> The non-compliance with Guideline C were relatively slight deviations from the requirement and the maximum driving duty in such cases were around 12 hours in a day.

paragraph 15(b) below.

14. TD has examined with the operators the possibility to shorten the maximum duty length and driving duty duration (i.e. Guidelines B and C) but all of them do not support the ideas because:

- (a) there is no observed correlation between bus accident rate and the length of drivers' duty hours;
- (b) the current requirements are in line with overseas practice;
- (c) at present, the average duty length of a bus driver is about 10 hours a day which is well below the maximum of 14 hours stipulated in the guideline; and
- (d) reducing the maximum driving hours allowed will reduce flexibility in bus scheduling and operation.

15. In view of the importance to prevent fatigue driving as expressed by the IEP and LegCo Members, franchised bus companies have agreed to the following changes:

- (a) all companies have increased the minimum break for drivers between successive working days from 8 hours to 9 hours (Guideline D); and
- (b) NWFB will ensure full compliance with Guidelines A and C by early 2005 through re-scheduling of driver duties and redeployment of drivers.

16. TD has asked the franchised bus companies to keep in view the need to modify the guidelines having regard to the local operating environment and overseas practices.

### **Installation of Safety Devices and Measures to Monitor Driving Behaviour**

#### ***Speed Limiter***

17. As at end 2003, over 95% of the franchised buses are installed with Engine Management System, Electro-mechanical Speed Limiter or Mechanical Governor to confine the maximum speed to 70 km/hr. The current position of each bus operator is summarized in Annex G.

18. Having regard to the recommendation of the IEP, all companies agreed to install speed limiters on all new buses when they are purchased. In addition, KMB will explore with its manufacturer to retrofit speed limiters on the existing 165 Mitsubishi single-deck buses which do not have speed limiting device.

### ***Blackbox***

19. A blackbox is an electronic tachograph that records information including the driving hour, vehicle speed, engine speed, brake application, door movement and vehicle tilt angle of a bus. The blackboxes are useful for accident investigation and fleet management. At present, about 1,300 buses of KMB, 40 buses of LW, 4 buses of CTB, 2 buses of NWFB and 10 buses of NLB are fitted with blackboxes.

20. All franchised bus companies agreed to the recommendation of the IEP to have blackboxes installed on all new buses to be purchased. In addition, KMB, LW and NLB planned to retrofit more buses with blackboxes in 2004. CTB and NWFB have agreed to conduct a trial for six months on the performance and cost effectiveness of retrofitting blackboxes on existing buses.

### ***Speed Guns***

21. In addition to deploying plain-clothed/uniformed inspectors and management staff on buses and at critical locations to monitor driving attitude of their drivers, all companies except NLB use laser speed guns for speed check against their drivers. NLB is considering the deployment or hiring of speed guns to conduct speed checks.

### ***Seat belts***

22. It is a mandatory requirement to provide seat belts for driver seats. Seat belts are provided for passenger seats in some of the newer buses. Nevertheless, it is observed that most passengers do not use seat belts because it makes boarding and alighting activities inconvenient, in particular for those who travel over a relatively short distance.

23. TD has collected information on the requirements of installation of seat belts on buses in 6 overseas countries and the European Union. Most countries examined require the installation of seat belt on driver's seat but do not require the

installation of seat belts on other seats on buses. For countries where the seat belt requirement applies, urban bus routes are exempted. Studies conducted in Australia and Canada indicated that the additional safety benefit of installing seat belt on all seats in a bus might not be as great as envisaged. Unrestrained passengers, particularly where standees are allowed on buses, can cause injury to other passengers who have fastened the seat belts. It is also very difficult to ensure that all passengers will use seatbelts.

24. In view of the above, CTB, NWFB and NLB will include armrests at exposed seats in their specifications for new buses whilst KMB and LW will provide seat belts at exposed seats and armrests for aisle seats without handpole. CTB, KMB and LW have completed retrofitting of armrests to exposed seats of existing buses, and NWFB plans to complete the retrofitting by end 2004. In addition, TD has asked all the franchised bus operators to conduct a review to ascertain any need to retrofit additional handrails to the buses.

### **Vehicle Examination**

25. Stringent measures have been developed over the years to ensure safety of franchised bus operation. These include:

- (a) subjecting every new model of franchised buses to a type approval process to ensure that its design and construction comply with the requirements stipulated in the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374A) before they can be registered and licensed for use on the road;
- (b) requiring franchised buses to undergo a tilt test to ensure stability;
- (c) requiring every franchised bus to undergo annual examination and a comprehensive examination at specified intervals to check its structural integrity;
- (d) the bus companies implementing monthly maintenance and daily inspection programmes; and
- (e) TD conducting random spot checks on franchised buses to ensure proper maintenance.

26. All bus companies are required to keep their performance record. TD will continue to monitor their maintenance programmes and hold regular meetings with the companies to discuss bus examination results and where appropriate formulate actions to enhance bus safety.

### **Measures to Promote Safety Awareness of Drivers and Passengers**

#### ***Driver***

27. The operators have undertaken to continue participating in the Road Safety Forum for Franchised Buses organized by TD, and to facilitate their drivers to attend the Road Safety Seminars and Road Safety Campaigns organized by TD and the Police.

28. Apart from the various training opportunities, franchised bus operators offer various Safety Bonuses and organize functions such as "Bus Captain of the Year" to motivate drivers and promote their awareness of road safety.

#### ***Passenger***

29. The review identified a need to strengthen bus passengers education on safety awareness. Last year, TD launched a publicity campaign aimed at reminding passengers to hold handrails tightly with broadcast of Announcement of Public Interest and distribution of posters and stickers. Separately, KMB produced a video on the proper ways in using bus services for on-bus broadcasting and distribution to schools, elderly homes and community centres. They also produced a series of 10-second TV commercials to remind passengers of safety messages including "holding onto handrails" and "no standing on stairway". KMB and LW have also incorporated road safety messages in their bus stop announcement systems.

30. KMB, CTB and NWFB are considering launching a series of publicity including:

- (a) use of on-bus broadcasting for promotion of safety tips;
- (b) display of posters inside buses to raise passengers' safety awareness;
- (c) display of safety messages on bus shelter panels and in the rear part of buses targeting at other motorists; and
- (d) inter-company bus captains driving skill competition.



31. TD will continue to work with the franchised bus operators and co-ordinate efforts on public education about bus safety.

## **WAY FORWARD**

32. TD will together with the bus companies:

- (a) expedite the implementation of the recommended improvements and actions;
- (b) continue to monitor bus operation closely and analyze the causes and trend of bus accidents and map out improvement measures to enhance bus safety;
- (c) continue to conduct careful route planning, taking into account the suitability of franchised bus operation with due regard to the design or conditions of the roads and deployment of suitable bus models on the routes;
- (d) continue to ensure that all buses are maintained up to the required standard;
- (e) continue to foster a responsible and caring driving culture through publicity and driving training, and promote the safety awareness of bus passengers through various publicity means; and
- (f) keep track of the best practices of bus safety arrangements in overseas countries and consider the adoption of appropriate arrangements in Hong Kong.

Transport Department  
May 2004

**No. of Bus Accidents by Severity of Accident (1999 - 2003)**

Year	KMB			CTB (F1)			NWFB			NLB			LW			CTB(F2)			All Operators			
	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	Fatal	Serious	Slight	Total
<b>1999</b>	16	193	909	2	51	275	3	58	240	0	0	4	0	3	29	0	6	34	21	311	1,491	<b>1,823</b>
<b>2000</b>	7	163	920	3	55	285	4	52	290	1	2	2	0	6	17	0	7	35	15	285	1,549	<b>1,849</b>
<b>2001</b>	10	181	907	1	57	285	2	54	243	0	0	2	0	5	20	1	4	38	14	301	1,495	<b>1,810</b>
<b>2002</b>	3	202	885	0	63	259	4	41	232	0	3	5	1	6	18	1	3	30	9	318	1,429	<b>1,756</b>
<b>2003</b>	11	184	848	5	42	241	0	49	241	0	2	4	0	2	17	0	5	31	16	284	1,382	<b>1,682</b>

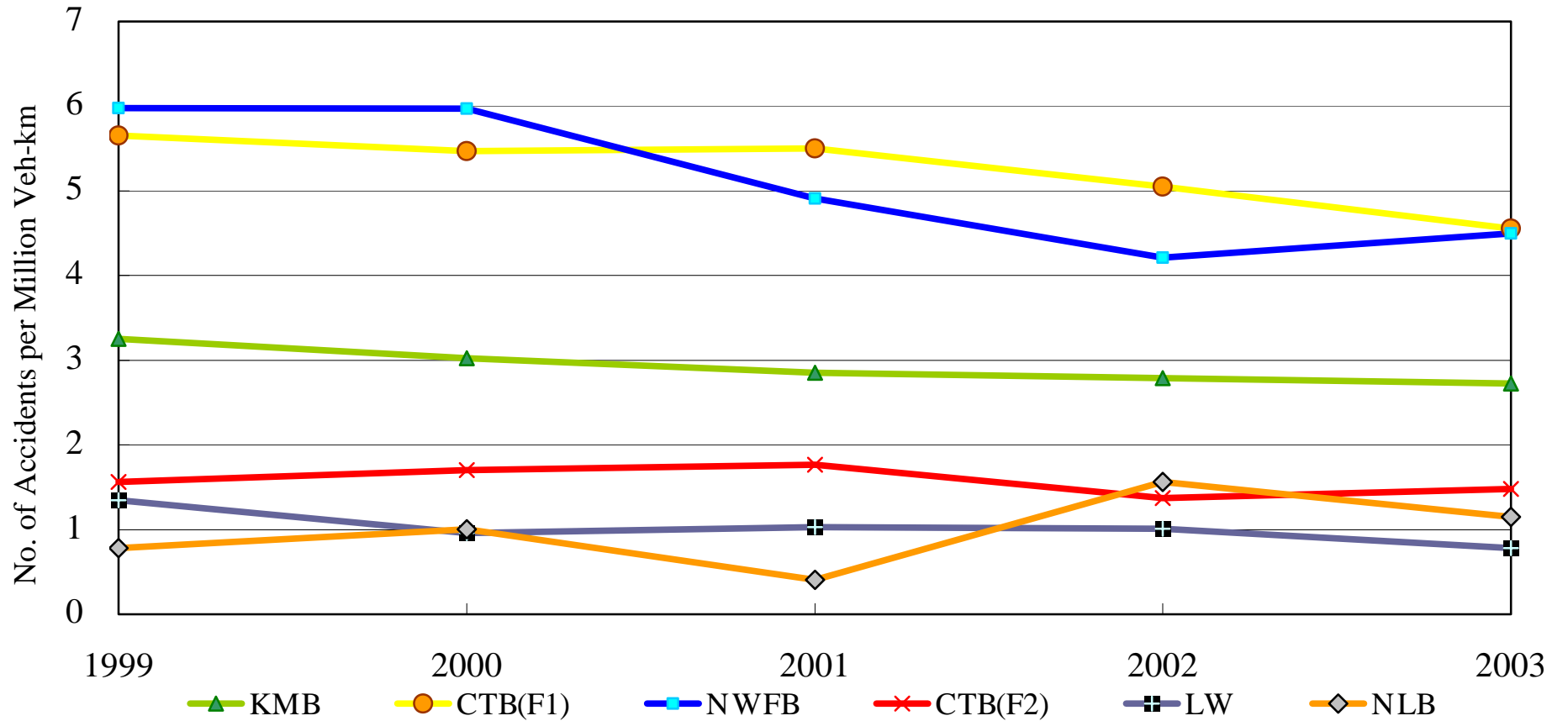
Note 1 : Figures excluding accidents involving franchised buses the operator of which could not be identified (82 in 2003).

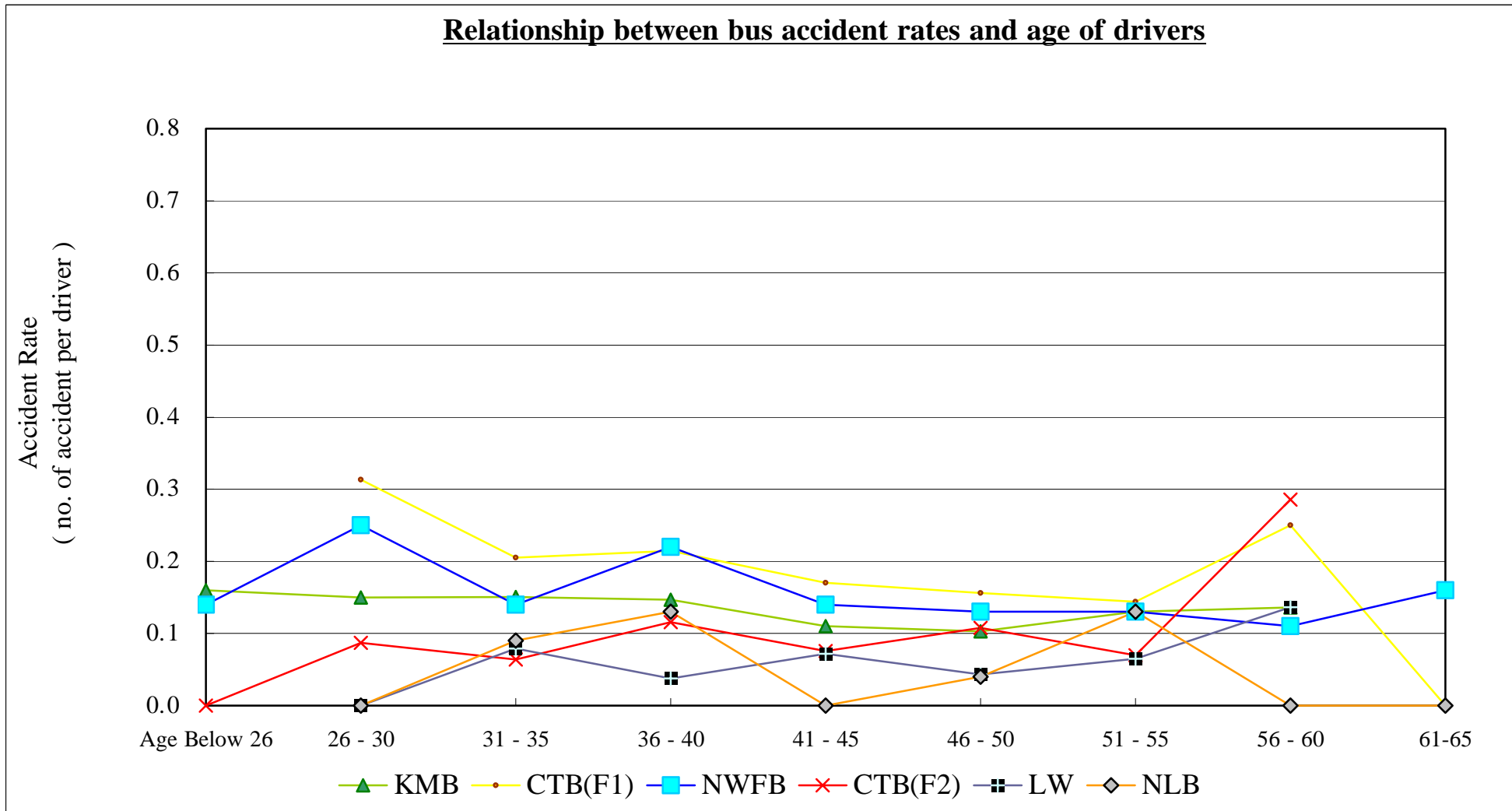
Note 2: A fatal accident is one in which at least one person is killed immediately, or is injured and subsequently dies of his/her injuries within 30 days of the accident.

Note 3: A serious accident is one in which one or more persons is injured and detained in hospital for more than 12 hours.

Note 4: A slight accident is one in which one or more persons is injured but not to the extent that detention in hospital is required for more than 12 hours.

**No. of bus accidents per km operated (1999 - 2003)**

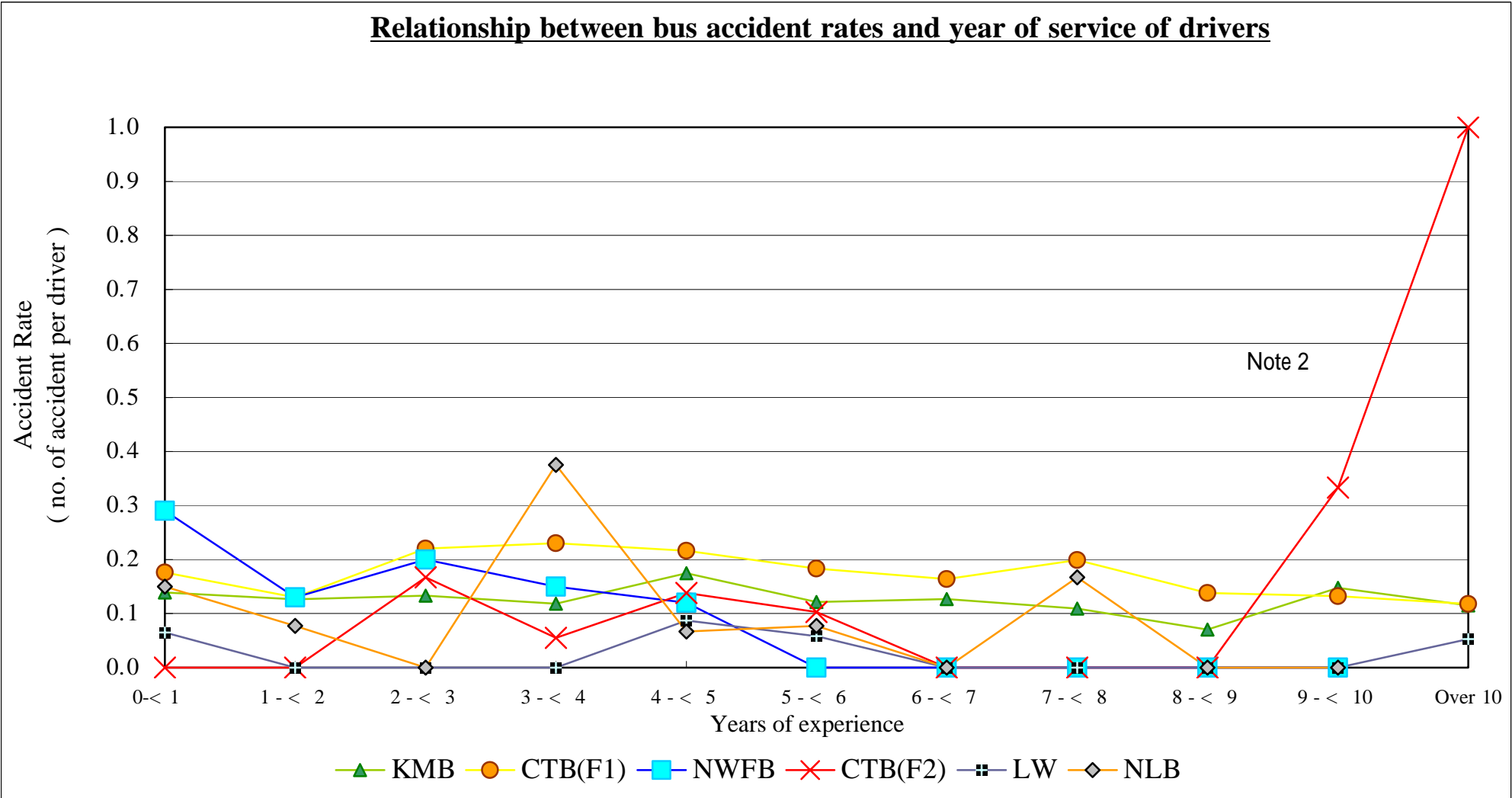




*Note 1: Figures were based on bus accidents occurred in a 12-month period in 2002/03.*

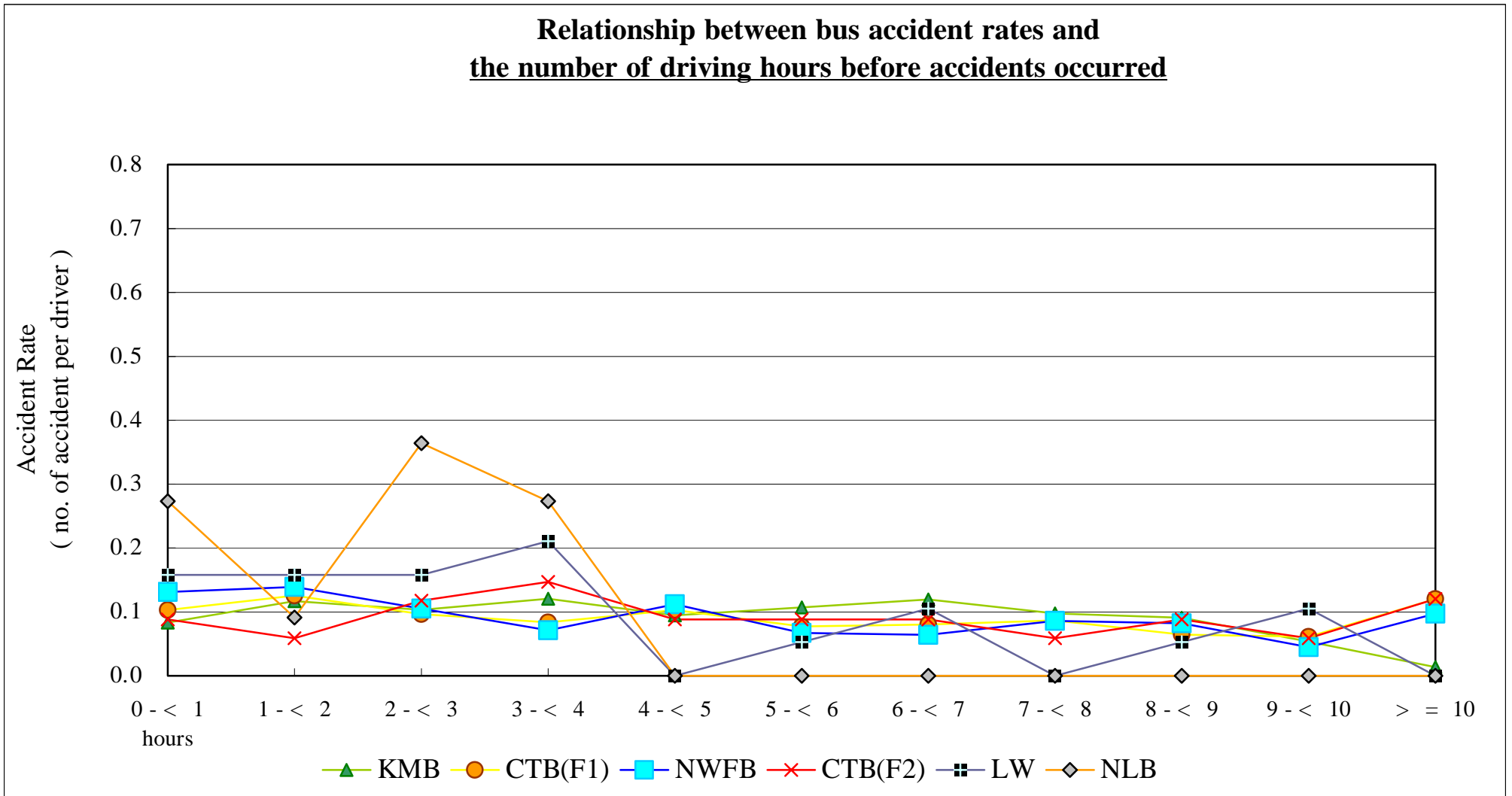
*Note 2: No driver below the age of 26 is employed by CTB(F1), LW and NLB.*

*Note 3: No driver above the age of 60 is employed by KMB, CTB(F2) and LW.*



Note 1: Figures were based on bus accidents occurred in a 12-month period in 2002/03.

Note 2: There were only 3 drivers with experience between 9 and 10 years; and only 1 driver with over 10 years experience serving CTB(F2). Since the bases were small, the accident rate in the year might not be representative of the age categories as a whole.



*Note: Figures were based on bus accidents occurred in a 12-month period in 2002/03.*

**Road Accidents with personal injuries involving franchised buses in 2003**  
**Driver Contributory Factors as reported by Police**

Contributory Factors	No. of franchised bus drivers involved	% of total
Driving too close to kerb / vehicle in front / vehicle alongside	124	6.8%
Stopping / starting negligently	88	4.8%
Trying to avoid collision	82	4.5%
Overtaking / changing lane negligently	59	3.2%
Driving too fast for road environment	33	1.8%
Reversing / Turning left or right negligently	24	1.3%
Opening door negligently	21	1.1%
Did not observe traffic signal / road markings	20	1.1%
Distracted by action inside / outside bus	19	1.0%
Exceeding speed limit	1	0.1%
Other driver factor <sup>1</sup>	192	10.5%
No driver factor <sup>2</sup>	1,165	63.7%
<b>Total</b>	<b>1,828</b>	<b>100%<sup>3</sup></b>

<sup>1</sup> Other driver factor means the bus accidents were contributory to driver's action including lost control of vehicles with or without reasons, inattentiveness of drivers, etc.

<sup>2</sup> No driver factor means the bus accidents were not contributory to driver's actions, e.g. pedestrian negligence, negligence of other motorists, bus passengers not holding handrails properly, objects on road, environmental factor like slippery road surface etc.

<sup>3</sup> The sum of the individual percentage figures do not add up to 100% due to rounding.

**Summary of overseas requirements on bus driver working hours and rest breaks**

<b>City / Country</b>	<b>Maximum duty hours per day</b>	<b>Service break requirement</b>	<b>Maximum Driving Duty per day</b>	<b>Break between 2 successive working days</b>
(1) British Columbia, Canada	15 hrs	Nil	13 hrs	8 hrs
(2) Norway	9 hrs	(a) Rest break after 4 hr 30 min of work (b) Meal break not stated	9 hrs	11 hrs
(3) San Mateo County, California, USA	16 hrs	(a) Rest break after 6 hr of work (b) Meal break after 6 hr of work	10 hrs	8 hrs
(4) Switzerland	12 hrs	(a) Rest break after half of work time (b) 3 rest breaks of at least 30 min	7 hrs	12 hrs
(5) Queensland, Australia	14 hrs	Rest break after 5 hrs	12 hrs	10 hrs
(6) Denmark	-	(a) Rest break after 4 hr 30 min (b) No restriction on meal break	9 hrs	11 hrs
(7) Hong Kong	14 hrs	(a) Rest break after 6 hr of work (b) Total service breaks of at least 20 mins within the 6-hour duty	11 hrs	9 hrs



**No. of buses fitted with speed limiting devices**

<b>Type of speed limiter</b>	<b>KMB</b>	<b>LW</b>	<b>CTB (F1)</b>	<b>CTB (F2)</b>	<b>NWFB</b>	<b>NLB</b>
Engine Management System	2,192 (51%)	136 (94%)	399 (51%)	164 (100%)	550 (75%)	9 (11%)
Mechanical Governor	1,666 (39%)	9 (6%)	391 (49%)	0 (0%)	184 (25%)	0 (0%)
Electro-mechanical speed limiter	272 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No speed limiting device	165 <sup>1</sup> (4%)	0	0	0	0	71 (89%)
<b>Total</b>	<b>4,295</b>	<b>145</b>	<b>790</b>	<b>164</b>	<b>734</b>	<b>80</b>

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<sup>1</sup> These are Mitsubishi single-deck buses. KMB is working with the manufacturer of these buses to explore whether speed limiters can be retrofitted on the buses.