

SUMMARY: Section 4007 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), (Pub.L. 102-240, 105 Stat. 2151-2152) directed the Secretary of Transportation to report to Congress on the effectiveness of the efforts of the private sector to ensure adequate training of entry-level drivers of commercial motor vehicles (CMVs). With this notice, the Federal Highway Administration (FHWA) is advising members of the general public that copies of the study entitled "Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report" and a cost-benefit analysis of requiring entry-level training for CMV drivers are now available from the National Technical Information Service (NTIS). Two copies have also been placed in the FHWA Docket number MC-93-12. The Agency is also requesting comments from the general public regarding the content and conclusions of the final report and cost-benefit analysis.

DATES: Comments must be submitted on or before October 22, 1996.

ADDRESSES: Submit written, signed comments to FHWA Docket No. MC-93-12, Room 4232, HCC-10, Office of Chief Counsel, Federal Highway Administration, 400 Seventh Street, SW., Washington, D.C. 20590. All comments received will be available for examination at the above address from 8:30 a.m. to 3:30 p.m., e.t., Monday through Friday, except Federal holidays. Those desiring notification of receipt of comments must include a self-addressed, stamped postcard.

FOR FURTHER INFORMATION CONTACT: Mr. Ronald Finn, Office of Motor Carrier Research and Standards, (202) 366-0647, or Mr. Charles Medalen, Office of Chief Counsel, (202) 3661354. Federal Highway Administration, 400 Seventh Street, SW., Washington, DC. 20590. Office hours are from 7:45 a.m. to 4:15 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Advance Notice of Proposed Rulemaking

In response to the requirement in § 4007 of the ISTEA that the Secretary commence a rulemaking proceeding on the need to require training of all entry-level drivers of CMVs, the FHWA published an advance notice of proposed rulemaking (ANPRM) on entry-level training on June 21, 1993 (58 FR 33874). There were 104 comments to the ANPRM, but no consensus was reached on the issue of mandated entry-level driver training. The heavy truck and bus industries were against mandated entry-level driver training.

The main objection of these industries to the proposed training requirement was that the existence of uniform licensing standards rendered training unnecessary. The International Brotherhood of Teamsters and the trucking schools were in favor of the training requirement. The trucking schools argued that if training was not mandated, the motor carriers and schools generally would not offer or require training.

Adequacy Study

In order to formulate a basis for the report to Congress on entry-level driver training required by the ISTEA, the FHWA hired a contractor to assess the adequacy of entry-level training for CMV drivers. In analyzing the adequacy of entry-level training, the contractor examined the training provided to entry-level drivers of heavy trucks, motorcoaches, and school buses. This examination disclosed that the percentages of employers who hire entry-level drivers and provide them with adequate training were as follows: school bus operator employers (24 percent), motorcoach driver employers (19 percent), and heavy truck driver employers (8 percent).

Consequently, the contractor concluded that neither the heavy truck, motorcoach, nor school bus segments of the CMV industry provided adequate entry-level driver training.

Cost-Benefit Study

The FHWA also had the contractor carry out a cost-benefit study of requiring entry-level driver training.

This study showed that the cost of mandating entry-level training for 360,000 drivers a year in the heavy truck industry would be \$4.5 billion over a 10-year period. The societal benefits of fewer accidents, reduced health care costs, and reduced delays caused by accident-related traffic congestion over the same 10-year period were estimated to range from \$5.8 to \$15.3 billion.

Report to Congress

The Secretary of Transportation submitted the "Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report" and the cost-benefit analysis to the U.S. Congress on February 5, 1996.

The FHWA is requesting comments from the general public on the entry-level training final report and cost-benefit analysis prior to taking any additional action. The FHWA is considering holding a public meeting at the close of the comment period on the issue of mandating entry-level training.

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

49 CFR Part 383

[FHWA Docket No. MC-93-12]

RIN 2125-AD05

Training of Entry-Level Drivers of Commercial Motor Vehicles

AGENCY: Federal Highway Administration, DOT.

ACTION: Notice of availability and request for comments.

12 pages

If the **FHWA** decides to hold such a meeting, a separate notice will be published in the **Federal Register**.

Availability of the Report

Copies of the study entitled "Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report" and the cost-benefit analysis of requiring entry-level training for **CMV** drivers are available from the NTIS, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The telephone number for placing an order from NTIS is 7034874650. The report number is PB 96141536. The domestic price per copy is \$61.00 while the foreign price is \$122.00 per copy. Checks or money orders should be made payable to "NTIS." American Express, VISA, MasterCard, or NTIS deposit account are also accepted. The final report, consisting of an Executive Summary; Technical Overview; and Findings. Conclusions, and Recommendations totals over 550 pages. The Executive Summary of "Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report" is reproduced as Appendix A to this notice. Two copies of "Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report" and the cost-benefit analysis of requiring entry-level training for **CMV** drivers have been placed in **FHWA** Docket **MC-93-12** and are available for public inspection as noted in the "Addresses" section above.

Members of the motor carrier industry and other interested parties may access a Word Perfect 5.1 version of the report and the cost-benefit study, through the **FHWA's** Electronic Bulletin Board System (FEBS) using a personal computer and a modem. The FEBS allows read-only access to information. Access numbers for FEBS are (202) 366-3764 for the Washington, D.C. area, or toll-free at (800) 337-3492. The system supports a variety of modem speeds up to 14,400 baud line speeds, and a variety of terminal types and protocols. Modems should be set to 8 data bits, full duplex, and no parity for optimal performance. Once a connection has been established, new users will have to go through a registration process. Instructions are given on the screen. FEBS is mostly menu-driven and hot keys are indicated by <> enclosing the hot key. After logging on to FEBS and arriving at the MAIN MENU, select <C> for Conference; then <M> for Motor Carrier; then either <M> for McRegis or <I> for Information (more detailed help).

For technical assistance to gain access to FEBS, contact: **FHWA** Computer Help Desk, **HMS-40**, room 4401, 400

Seventh Street, SW., Washington, D.C. 20590. The telephone number is (202) 366-1120.

Authority: 23 U.S.C.315; 49 CFR 1.48; Sec. 4007 of Pub. L. 102-240, 105 Stat. 1914, 2151.

Issued on: April 18, 1996.

Rodney E. Slater,
Federal Highway Administration.

Executive Summary

This document is Volume I of a three volume, final report of a project titled, "Assessing the Adequacy of Entry-Level Commercial Motor Vehicle Training in the Private Sector." In this volume, we summarize the background, methodology, findings, conclusions and recommendations of the study. Volume II provides a more extensive technical overview of each of these topics. Volume III contains detailed discussion of these topics, plus appendices containing a summary of the literature review and an explanation of training adequacy scoring.

Background

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Public Law 102-240 mandates that the **FHWA** report to Congress on the effectiveness of private sector efforts to ensure adequate training of entry-level drivers of commercial motor vehicles (CMVs). The act directed the **FHWA** to initiate a rulemaking on the need to require training of all entry-level drivers of **CMVs**. If, as the result of the rulemaking proceedings, the **FHWA** determines that it is not in the public interest to require training of all entry-level **CMV** drivers, the **FHWA** must submit a report to Congress explaining the reasons for this decision, including a cost-benefit analysis.

To satisfy this mandate from Congress, **FHWA** needed to collect information that would permit them to determine the adequacy of private sector training efforts. This project was initiated to support **FHWA** in collecting, compiling and analyzing this information.

Objectives

The principal objective of the project was to satisfy the congressional mandate. In the words of the **ISTEA**, this meant that the principal objective was to determine "the effectiveness of private sector efforts to ensure adequate training of entry-level drivers of commercial motor vehicles." "Commercial Motor Vehicles" for the purposes of this study included heavy trucks, motorcoaches and school buses. Each of these **CMV** types represented a separate private sector. In addition to

determining the adequacy of training, **FHWA** must go further and determine whether or not it is in the public interest to require training of all entry-level **CMV** drivers. So, an important secondary objective of the study was to support **FHWA** in its decision-making process.

Conclusions and Recommendations

This section presents the conclusions and recommendations of the study. The first subsection below addresses the conclusions related to the training adequacy issue. The next subsection presents conclusions related to the various factors that could affect **FHWA's** decision making process. Finally, recommendations are presented for future actions. Data and discussion to support the conclusions and recommendations occur in later sections.

Are the Private Sectors Effective at Ensuring Adequate Training?

Are the three private sectors-heavy trucks, motorcoaches and school buses-effective at ensuring adequate training for their entry-level drivers? The conclusion of this study is that none of the three private sectors are effectively providing adequate training. What evidence exists that the training is inadequate? The data comes from both the motor carriers and the drivers surveyed in this study.

Table 1 presents data for the motor carriers. The first row of the table shows the percent of motor carriers hiring entry-level drivers that provide formal training for them. The percentages are calculated from data in Volume III, Tables 3.3, 4.3 and 5.2. For example, Table 3.3 shows that 24 of the 111 heavy truck carriers who hire entry-level drivers provide formal training. This calculates to 21.6 percent, as shown in Table 1. The second row in Table 1 shows the percent of motor carriers whose formal training was judged as "Adequate." For motorcoaches and school buses, the percentages comes directly from Volume III, Tables 4.5 and 5.4. For heavy trucks, the percentage is derived from Table 3.5 by combining the Number Adequate values for For-hire and Private Fleets (i.e., nine of the 24 company programs were adequate). The third row in Table 1 provides an estimate of the percent of motor carriers hiring entry-level drivers that provide adequate training for them. This figure is obtained by combining the data in the first two rows. For example, if 21.6 percent of the heavy truck carriers hire entry-level drivers and provide formal training for them, but only 37.5 percent of the carriers had adequate formal

training, then multiplying 21.6 by .375 gives 8.1 as the estimate of the percent of heavy truck carriers that provide adequate formal training.

"Effectiveness" was defined as the prevalence or frequency with which the motor carriers in each domain provided formal training for their entry-level drivers. Some sort of formal training (as defined later in this document) was deemed necessary in order to provide the opportunity for development of the essential knowledge, as well as the minimum skills, needed to operate the CMV. That is, just because a motor carrier offers formal training does not mean that the training is adequate, but it would be very difficult for a carrier's training to be judged adequate, unless it was formal.

See the End of the Report for Table 1

As can be seen from the table, relatively few (22 percent) of the heavy truck motor carriers surveyed that hire entry-level drivers provided formal training for them. However, well over half of the motorcoach and school bus carriers that hire entry-level drivers did so.

"Adequacy" was defined in terms of how the formal training provided by a sub-sample of the carriers in each domain compared to the recommended minimum requirements for entry-level driver training established by industry experts. To be judged "Adequate," a program had to be, on average across various sub-scores, in conformance with the criteria set by these experts. (The scoring system is described later in this document and in Volume III, Appendix B.)

The table shows that only about one-third of the carriers with formal training that were sampled had training that was adequate. The heavy truck private sector had the largest percentage of adequate training programs and the motorcoach private sector, the smallest. The third line of the table combines the prevalence information (the first line) and the adequacy information (line two) to provide an estimate of what percentage of the motor carriers in each domain, that hire entry-level drivers, provide adequate training for them. The motor carrier findings can be summarized as follows:

- The heavy truck private sector has the smallest percentage of carriers offering adequate training (about 9 percent). This means that, of those heavy truck carriers that hire entry-level drivers, only about one in ten would be expected to provide adequate training.
- The school bus private sector had the largest percentage of carriers

providing adequate training (about 24 percent). Even with this, the highest percentage, only about one carrier in four carriers would be expected to provide adequate training.

None of the private sectors can be considered effective in ensuring adequate entry-level training, given these figures.

While Table 1 provides an estimate of the number of motor carriers in each domain that provide adequate training, a more basic question is, "What percent of the drivers are being adequately trained?" Also, it is known that publicly funded and proprietary schools are other sources of formally trained drivers for the heavy trucking industry, so a second question is, "To what extent do the schools add to the percent of adequately trained truck drivers?"

Data to answer these questions come from Tables 3.15, 3.18, 4.9, 4.11, 5.8, and 5.10 in Volume III, which present findings from the Driver surveys. Several of the industry experts supporting the project indicated that training within the heavy truck industry has improved substantially within the last five years. So, it was considered desirable to examine the data for "New" drivers only, i.e., drivers with five or fewer years experience. The data for New drivers are compiled and summarized in Table 2 below.

It can be seen that about 62 percent of the 141 heavy truck drivers in the sample report receiving formal entry-level training. There were four sources of this formal training. By far, the most frequently reported source was proprietary schools (48 percent) followed by publicly funded schools (about eight percent). Military schools and company-operated schools combined accounted for only about six percent.

The second column of the table indicates what percentage of the drivers receiving each type of formal training reported receiving training that was judged as "Adequate." The criteria used to evaluate the training reported by the drivers were the same as those used to evaluate the company training programs, as reported in Table 1 above.

The estimate of the percent of drivers adequately trained (the third column) was derived from the first two. For example, 44.8 percent of the 47.5 percent of drivers reporting proprietary school training received adequate training. So, 47.5 times 0.448 equals 21.3 percent as the estimate of the percent of New drivers who receive adequate training from this source. Publicly funded schools contribute another 4.2 percent and the combination

of military and company schools account for 5.6 percent.

See End of the Report for Table 2

To summarize, 62 percent of the New heavy truck drivers reported receiving formal training, about 50 percent of which scored as adequate. This resulted in the estimate that 31 percent of New heavy truck drivers are receiving adequate training. It is interesting to compare these numbers with the numbers (not shown in the table) of the "Experienced" driver group. These are drivers who have been driving between six and 10 years. About 32 percent of the 229 Experienced drivers reported receiving formal training, about 51 percent of which scored as adequate, resulting in the estimate that about 16 percent of the Experienced drivers received adequate training. So, while the percentage of New drivers who report receiving formal training is almost twice that of Experienced drivers, the percent receiving adequate training is the same. The percentage of New drivers that receive adequate training is higher than for Experienced drivers because more New drivers receive formal training, not because a greater proportion of that formal training is adequate.

Comparing the Percent Drivers Adequately Trained figures from the table, it can be seen that the figure for School Buses is highest (about 35 percent) followed closely by Heavy Trucks (31 percent) then Motorcoaches (18 percent).

It is possible to answer the two questions that began this discussion as follows:

- How many drivers are adequately trained? For new drivers (driving five years or less), between 18 and 35 percent are adequately trained, although these figures may be optimistic.
- To what extent do the schools contribute to this percent of adequately trained truck drivers? They contribute substantially. The proprietary and publicly funded schools produced about seven times the number of adequately trained heavy truck drivers as did the company programs.

Based on the driver data, are the private sectors effective at ensuring adequate entry-level training? At best (school buses), only one-third of the recently trained entry-level drivers received adequate training and more than 40 percent of the reported training was not adequate. At worst (motorcoaches), only about two in ten drivers received adequate training, two-

thirds of the formal training was not adequate, and 50 percent of the drivers did not even receive formal training. Given these statistics, none of the private sectors can be considered as effective in ensuring adequate training of their entry-level drivers.

Thus the conclusions are the same, whether the data upon which they are based comes from the motor carriers (i.e., Table 1) or the drivers (Table 2).

There are three corollary issues related to training adequacy that deserve mention. The first has to do with "exemplary" training programs/activities. In order to assure that the study did not overlook good training programs or activities that were being carried out in any of the domains, survey respondents were asked to identify programs/activities they believed were exemplary, i.e., worthy of imitation. It should be emphasized that no criteria were imposed on the respondents—they used their own criteria to determine what was exemplary. Information was collected on these programs and their adequacy was scored.

The heavy truck respondents had no trouble identifying programs they thought were exemplary. Nearly all of the 27 programs they identified involved formal pre-service training. Fourteen (14) of the programs were run by carriers and, of this group, almost half included on-the-job training. The five programs recommended by the motorcoach respondents were formal training. Only one of the school bus respondents was able to recommend an exemplary formal training program.

In general, the adequacy of the "exemplary" programs was no better than the adequacy of the programs selected at random from the various domains. The programs recommended by our heavy truck respondents as being exemplary did not quite achieve the minimum standards determined by our trucking industry experts. On average, the motorcoach exemplary programs

scored at about the recommended minimum level. The one school bus exemplary program was above the minimum standard.

Examination of the "exemplary" programs provided corroboration that the programs selected at random, at least from the heavy truck and motorcoach domains, were representative of the industries as a whole.

The second corollary issue relates to how big a motor carrier must be in order to provide formal training. Across all domains, even the smallest carriers offered formal training. While most of the exemplary programs were operated by medium to large carriers, several adequate or better heavy truck and motorcoach programs were operated by small carriers. It is apparent that adequate entry-level training need not be limited to the larger carriers.

The third corollary issue relates to industry plans that could result in future improvements in training program adequacy. Across all domains, few motor carriers, associations or insurance companies expressed plans that would increase the prevalence of formal training of entry level drivers. As noted earlier, without at least increasing the prevalence of formal training, it would be difficult for the overall adequacy of the training to improve. Therefore, it appears that the present level of training adequacy is not likely to improve due to the actions of the private sectors themselves.

What Are the Decision Factors and the Conclusions Related To Them?

Four decision factors (in addition to the adequacy of training) were identified that should be considered in determining FHWA's response to Congress. These decision factors are as follows:

- The accident problem, including both the magnitude of the accident problem and recent trends.

- The effectiveness of training as a solution to the problem, i.e., tie relationship between training and accident reduction.

- The impact of mandated training, including factors that will negatively impact the condition of the industry, if training is required, such as:

- The impact of other Government Regulations.

- Driver turnover.

- Driver demand/shortage.

- Existence/effectiveness of other government programs, including the potential impact of the Commercial Drivers License (CDL), as well as the impact of other Government programs (if any) intended to reduce the CMV accident problem.

The conclusions of the study with regard to each of these factors are presented below. To provide perspective, the size of the industries (private sectors) is summarized prior to the presentation of the conclusions themselves.

Size of the Industry. The heavy truck domain is by far the largest of the three domains, and the motorcoach domain is the smallest. The heavy truck domain is also the most complex of the three. It is comprised of a number of different types of carriers, each with its own unique characteristics, problems and needs. In particular, the specialized fleets have different (but overlapping) entry-level training needs, when compared to the needs of the for-hire and private carriers of cargo.

The accident problem. Discussion of the accident problem must include both the magnitude of the problem today and the problem trend over recent years.

Concerning the magnitude of the problem, the tabulation below shows the number of crashes, injuries and fatalities for each of the domains (to the extent known), for 1990:

| | Trucks | Motorcoaches | School buses |
|--------------------------|---------|---------------|--------------|
| Number of Crashes | 318,500 | Unknown | 28,500 |
| Number of Injuries | 130,000 | Unknown | 24,000 |
| Number of Deaths | 5,254 | 39 | 128 |

The table shows that, in absolute numbers:

- Heavy truck accidents result in far more fatalities than either motorcoaches or school buses.
- School buses are involved in far fewer crashes, injuries and fatalities than

large trucks, but they have about three times the fatalities of motorcoaches.

Our data source for non-fatal accidents does not discriminate among school buses, intercity buses (i.e., motorcoaches) and transit buses. However, it estimates that in 1990, injuries in bus accidents account for

only about 1.1 percent of the injuries for all accidents (as compared to about 4 percent for medium and large trucks). For 1992, the bus injury accidents were about 0.7 percent of the total.

In addition:

- Heavy trucks have less than half as many accidents per 100 million miles

traveled than passenger vehicles, but they have 56 percent more fatal accidents.

—In about 25 percent of the fatal accidents, the truck driver was reported to have made an error or otherwise contributed to the accident; in 72 percent of these accidents the other driver was reported to have made an error, but not the truck driver.

Conclusions concerning the magnitude of the accident problem are as follows:

—It is clear that, for fatal accidents, heavy trucks have the greatest problem, followed by school buses, then motorcoaches. The percentage of all injuries attributed to bus accidents (motorcoaches, school buses and other types combined) is only about one-fourth of the percentage attributed to trucks.

—Truck drivers are involved in fewer accidents per 100 million miles driven than passenger vehicle drivers and they are less likely to be noted as having made an error contributing to the accident. However, when a truck driver is involved in an accident, it is more likely to involve at least one fatality. Comparable data were not available for motorcoach and school bus drivers.

With regard to accident trends, there are three conclusions:

—For heavy trucks, fatal accidents are less frequent (relative to the number of miles driven by trucks) than ten years ago. The vehicle involvement rate per 100 million miles traveled reduced from 5.8 in 1980 to 3.9 in 1990.

—The fatal accident involvement rate per 100 million miles traveled has decreased over the 11 years period between 1980 and 1990 by the same amount (32 percent) for both heavy trucks and passenger vehicles. Heavy trucks decreased from 5.8 to 3.9 and passenger vehicles decreased from 3.7 to 2.5. "Passenger Vehicles" are defined as vehicles, including automobiles and light trucks, with GVWRs of 10,000 pounds or less.

—There does not appear to be any trend in the accidents rates for motorcoaches and school buses.

There are at least two implications for decision-making within these conclusions:

—The magnitude of the accident problem parallels the size of the industry, i.e., heavy trucks is the largest industry and has the highest fatalities. However, heavy truck fatalities appear to be over-

represented when size of the industry (number of drivers) is taken into consideration. The number of truck drivers is estimated to be about 5,600,000 while the number of motorcoach drivers is estimated at 156,000 and the number of school bus drivers at 742,000. There were 5,254 fatalities involving heavy trucks in 1990, 39 involving motorcoaches and 128 involving school buses. This calculates to 0.93 fatalities per 1000 truck drivers as compared to 0.25 fatalities per 1000 motorcoach drivers and 0.17 per 1000 school bus drivers.

This should not be taken to mean that truck drivers are poor drivers. The difference in the fatality rates is more likely due to exposure—the truck drivers drive more miles on average than motorcoach and school bus drivers. So, they are at higher risk of accident involvement. However, it does imply that any efforts to improve the safety of truck drivers (such as requiring adequate safety training) will likely have a greater return, in terms of accidents avoided, than the same efforts aimed at motorcoach and school bus drivers. Some ANPRM and survey respondents indicated that training should not be mandated because the industries are already doing a good job with various activities intended to reduce accidents. The trend data do show a reduction in fatality rates for combination trucks, but a reduction of the same magnitude occurred for passenger vehicles. It was beyond the scope of this study to determine the reasons for the declines. However, given the data available to the study, it was not possible to demonstrate any special effect of industry training activities, beyond whatever factors could be causing a general decline for both trucks and passenger vehicles.

The effectiveness of training as a solution to the problem. The findings as to the effectiveness of training were contradictory. While some in-house studies by carriers reported that training reduced accidents, other studies using random samples of drivers (including this study) noted a tendency for trained drivers to have slightly more accidents. Some researchers have attributed this tendency to the high variability in training quality, indicating that poor training may give the new driver a false sense of confidence in his/her abilities. However, this study found no evidence of a relationship between adequacy of the training the driver reported receiving and his/her frequency of accidents.

What implications for decision-making can be derived from these

contradictory findings? The answer to this question seems to be that, while adequate training is a necessary condition for the reduction of CMV accidents, it is not a sufficient condition. Something more has to happen in order for training to have its effect. A discussion of these additional factors is contained in Volume III, Section 7.

The impact of mandated training. Survey respondents were asked whether mandated training would impact the condition of the industry or the drivers, the turnover problem or the driver shortage problem. For a given question, the individual groups within a domain sometimes differed greatly in their response distributions. However, none of the samples provided a uniformly extreme response to any of the questions. There was no consensus in the samples that requiring entry-level training would strongly influence any of these factors, one way or the other.

The following statements capture the general nature of the opinion within each domain:

—There are probably more people presently against mandated training than are for it, but not by a large margin. While the responses to the Advance Notice of Proposed Rulemaking (the ANPRM, as discussed in a later section) were heavily against mandated training, the responses of the random samples surveyed in this study were more equally divided (as discussed above). In addition, the CVSA Survey respondents were overwhelmingly in favor of mandated training. However, these persons were already drivers and not likely to be affected by the mandate.

—The majority of each domain could support mandated training if a program were developed that addressed and resolved the numerous economic and administrative issues. This is based on the responses to the ANPRM as well as comments made by the respondents to this study.

—There is also a substantial number of people who would support a performance-based (i.e., testing) alternative centered around strengthening the existing CDL program. The basis for this statement comes mainly from the responses to the ANPRM.

Clearly, any decision made by FHWA will have supporters and detractors. However, opposition will be reduced to the extent that the program (if any) promulgated by the agency addresses the economic and administrative issues.

Existence/effectiveness of other government programs. The conclusions related to this decision factor are as follows:

- Concerning the CDL program, the large majority of the survey respondents believed that the CDL would increase the likelihood of adequate training. The majority of the drivers believed that their CDL training went beyond what they needed to pass the CDL tests. There appears to be a general agreement that the CDL will have a positive impact on the adequacy of training.
- Concerning other government programs, it was concluded that:
- The activities of the Research and Special Programs Administration (RSPA) also includes the training of heavy truck drivers who transport hazardous materials. However, RSPA's intent is generally to prevent incidents involving hazardous cargo, rather than teaching driving skills to drivers. So, there is no conflict, and minimal overlap, with the driver training promulgated by RSPA.
- There appears to be nothing in any of the other programs that would conflict with, or substitute for, an intervention strategy intended to reduce CMV accidents.

Recommendations

It was stated earlier that none of the private sectors-heavy trucks, motorcoaches or school buses-are effectively providing adequate training. Data were presented to support the fact that none of the private sectors were totally effective in providing formal training for their entry-level drivers, i.e., the prevalence of formal training in all sectors could be improved. Data were also presented to show that relatively few of the formal training programs that were provided met the study criteria for adequacy.

However, FHWA should not make a decision concerning any intervention strategy, including requiring entry-level training, based on prevalence and adequacy information alone. The other decision factors discussed in this report must be considered in determining whether it is in the public interest to take some action, and for determining which action to take.

The data on the accident problem lead to one recommendation: If it is desirable to target fewer than all three domains, the heavy truck domain should be considered first priority, followed by motorcoaches.

The study data and the ANPRM responses suggest that there are three intervention strategies (in addition to

doing nothing at all) that FHWA should consider:

- Training-based. This strategy involves requiring the training of entry-level CMV drivers.
- Performance-based. With this strategy, entry-level CMV drivers would be required to pass more comprehensive knowledge and skill tests than are presently required to obtain a Commercial Drivers License (CDL).
- Industry-based. Here, reduction in CMV accidents would be achieved by means of a carefully structured set of cooperative FHWA-industry initiatives intended to encourage better training of CMV drivers.

The conclusion was stated earlier that training, by itself, is not sufficient to reduce CMV accidents. This suggests that a combination of the above strategies would produce the best results. Either the Training-based strategy (which regulates the content of training) or the Performance-based strategy (which regulates the outcome of training) should be combined with the Industry-based strategy.

Which strategy-Training-based or Performance-based-should be selected? There are compelling arguments for both strategies. The Training strategy permits detailed control of the training content, even content like attitudes and accident avoidance skills, that is difficult to measure on a performance test. The Performance strategy provides the industries with greater flexibility in training their drivers, and the CDL structure exists as a starting point.

A more extensive analysis is needed to determine which alternative is preferable. To select between the two strategies, the recommended next steps are as follows. FHWA should:

- Develop draft program specifications.

The objective should be to describe model Training and Performance-based programs in enough detail that their respective costs and impacts can be assessed. The Recommendations section in Volume II provides a listing of the elements that should be included in the program specifications.

- Obtain feedback on the draft programs from industry and the states. Revise the program specifications to address problems, reduce costs and improve potential effectiveness.

Select between the two Programs based on which provides the better cost/effectiveness.

One possible outcome of the above process could be a hybrid program, i.e., a combination of the Training- and Performance-based approaches that embodies the advantages of each.

When a strategy is determined, detailed training/performance standards should be developed. To establish the groundwork for standards development, it is recommended that FHWA adopt the three-element definition of entry level training that was used in this study, rather than pre-service training alone.

In this study, entry-level training was defined as all training received during the first three years of the driver's experience. Entry-level training included the following three elements:

- Pre-service Training. This is training received prior to starting work as a CMV driver. Pre-service training is the most reliable way to provide the basic skills and knowledge needed before the new driver goes on-the-job.

-On-the-job Training (OJT). OJT is provided when the new driver first begins actually hauling cargo or passengers. It provides a cost-effective way for the new driver to develop his/her skills.

-In-service Training. In-service training includes those activities provided by the motor carrier that are specifically intended to improve the safety-related skills and knowledge of its drivers, including (but not necessarily limited to) entry-level drivers. In-service training provides a means of refreshing skills, such as accident avoidance, that can degrade over time.

To develop the standards:

- The model tractor-trailer curriculum should be revised and expanded to include OJT and In-service training. This revised curriculum would be an essential component of either the Training-based or the Performance-based strategy.

-If the intervention is to include motorcoaches and/or school buses, FHWA should develop three-element model curriculum specifications for operators of these CMVs. These curricula should be developed in close cooperation with motorcoach and school bus industries.

FHWA should consider revising the model tractor-trailer curriculum, and developing the model motorcoach and school bus curricula, even if FHWA decides not to proceed with required training or some other intervention strategy. The existence of these up-to-date standard curricula will make it easier for concerned elements within the private sectors to voluntarily implement adequate formal training.

With regard to the Industry-based strategy, the recommended first step is to investigate and select initiatives for inclusion in the program. Possible initiatives are discussed in Volume III, Section 6. Once additional data are

collected, FHWA should develop a program specification for this strategy. It is recommended that FHWA advocate and act to initiate some form of Industry-based program whether or not a Training- or Performance-based program is carried out.

Supporting Detail

The remainder of this document contains summaries of study findings from which the foregoing conclusions and recommendations were derived. The section begins with a description of the scope of the effort and the definition of key concepts. Then the study methodology is briefly described. After this, the supporting detail leading to the conclusions and recommendations is summarized in the same order that the conclusions were presented in the previous section.

Scope of the Effort

Several definitions and decisions were made early in the project that limited the scope of the study. They are described below.

Commercial Motor Vehicles Included in the Study. "Commercial motor vehicle" was defined in accordance with the Commercial Motor Vehicle Safety Act of 1986. The study included all heavy duty trucks (i.e., over 26,000 Gross Vehicle Weight Rating), but passenger carrying CMVs were limited to Long Haul Regular Route (LHRR), Charter/Tour (C/T) and School Buses. Private Motor Carriers of Passengers (PMCP) and Metro/Transit Buses were excluded because they were not generally subject to the Federal Motor Carrier Safety Regulations (FMCSRs) at the commencement of the study. However, PMCPs are presently subject to the FMCSRs.

Thus, the study focused on three CMV "domains": Heavy duty trucks (hereafter referred to as "Heavy Trucks"), Motorcoaches (including long haul and charter/tour buses) and School Buses.

Scope as Related to Hazmat Vehicles. With regard to vehicles used in the transportation of hazardous materials requiring placarding ("Hazmat" vehicles), the study was limited to determining the prevalence and adequacy of the entry-level driving training received by drivers of these vehicles.

What is the "Private Sector?" In this study, the terms "industry" and "private sector" are used interchangeably. There is a different "private sector" or "industry" for each of the three CMV domains - heavy trucks, motorcoaches, and school buses.

A private sector includes companies, organizations, and individuals that have

a direct interest in the transportation-related activities surrounding that particular domain and that are in a position to impact, directly or indirectly, the training of entry-level drivers. These groups and individuals fall into the following categories and subcategories (although not all private sectors have them all): driving schools (proprietary, publicly funded and company-operated), certification/accreditation groups, motor carriers, associations (including unions), insurance companies and drivers.

Definition of "Adequate Training." Two focus groups were assembled, one from the trucking private sector and the other from the motorcoach and school bus private sectors. They were asked to define the minimum acceptable curricula for entry-level heavy truck, motorcoach, and school bus training. They reached consensus on minimum criteria on eight factors including classroom hours, practice (off-street and on-street) hours, student/teacher ratios, behind-the-wheel time and course content topics.

An adequacy scoring algorithm was derived that consisted of eight adequacy sub-scores and an Overall Adequacy Score (OAS). An adequacy sub-score reflects the extent to which a training program (or the training reported by a driver) deviates from a training criteria. For example, a school program that has a score of zero (0) on the Class/Lab Hours Sub-score would be exactly in conformance with the number of class/lab hours recommended by the experts. The OAS is the average of the eight sub-scores. So, a school with an Overall Adequacy Score of -11 has adequacy sub-scores that are, on average, 11 percent below the criteria values established by the experts.

Details concerning the criteria and the adequacy scoring procedures are contained in Volume III, Appendix B.

Support for Rulemaking

In addition to carrying out data collection activities for the decision factors listed above, another aspect of the project involved providing support for the rule making process.

The ISTEA required FHWA to issue a rulemaking on the need to require training of all entry-level drivers of CMVs. As a first step in rulemaking process, the Federal Highway Administration published an Advance Notice of Proposed Rulemaking (ANPRM) titled, Training for All Entry Level Drivers of Commercial Motor Vehicles (CMVs) in the 21 June 1993 issue of the Federal Register. The responses to the ANPRM were analyzed, organized and abstracted for this report.

Methods

The collection of data for the study involved six data collection activities:

- Industry Surveys. Representatives of the private sector (as defined above) of each domain were interviewed.
 - Schools Surveys. A random sample of the schools that presently provide training for entry-level drivers in each domain were surveyed. The term "school" was defined broadly to include motor carriers who provide formal training for their own entry-level drivers, as well as proprietary and publicly funded schools.
 - Driver Surveys. The drivers themselves were interviewed.
 - Accident Data Collection. Truck, motorcoach and school bus accident and accident trend data were obtained from National Highway Traffic Safety Administration and National Safety Council Publications.
 - Federal Agencies Data Collection. Federal government agencies were contacted to determine the existence of policies, regulations or practices that could impact the effectiveness of the private sector's efforts to ensure adequate training of entry-level CMV drivers.
 - CVSA Data Collection. The Commercial Vehicle Safety Alliance (CVSA) agreed to include eight questions about driver training in their Roadcheck '93 survey. This survey was performed in June 1993.
- In addition to the data collection activities listed above, there was a seventh data collection activity referred to as the Exemplary Programs Data Collection. This activity was considered apart from the others because it did not directly impact any of the decision factors.

The goal of the Exemplary Programs data collection was to identify the best of the training programs that presently exist within each domain, i.e., to define what is possible for the industry to accomplish. Exemplary Programs were identified by the Industry Survey samples and contact was made with these organizations to obtain information about the programs/activities.

The adequacy of the entry level formal training programs recommended as being exemplary was determined, as was the adequacy of the formal training programs identified from our random samples of schools and motor carriers. We also examined the adequacy of the entry-level training described by our driver sample.

Table 3 shows the number of industry organizations of each type that were included in the Industry Survey for each

domain. It **also** shows the number of **schools**, exemplary programs and drivers surveyed.

In addition, a **total** of 5669 CVSA **questionnaire** forms were received and **analyzed**. As expected, very few buses (only 17) were included in the sample. The large majority of the drivers (66.6 percent) were operating tractor/single trailer combinations, but a small number (146) of twin, double and triple drivers were included. Straight trucks comprised 6.5 percent of the sample.

Sea end of the Report for Table 3

Prevalence/Adequacy of Private Sector Programs

The study focused on three types of private sector programs:

- Training Programs, i.e., formal, structured **courses**.
- Training Activities, i.e., isolated, short duration, events such as watching videos, reading **manuals** and attending safety meetings.
- Training Support Activities, i.e., anything that encouraged/supported the actual training of entry-level drivers.

In the following paragraphs, the findings for the "exemplary" programs recommended by our survey respondents will be summarized first, then the findings obtained from our random samples of industry associations, motor carriers and schools.

Exemplary Training Programs/Activities. The exemplary **training** programs and **training** activities are first **described** and then their adequacy is **discussed**.

What is an Exemplary Training Program/Activity? The heavy truck, motorcoach and school bus Industry survey respondents were asked to recommend training programs or training activities that they believed were exemplary, i.e., worthy of imitation by the rest of the industry. The respondents were free to define exemplary programs/activities using any criteria they chose.

Program/Activity Descriptions. The heavy truck industry survey respondents recommended 27 exemplary training programs/activities. Fourteen (14) were company-operated training programs. The companies themselves were generally large to very large. Nearly all reported that they require their entry-level drivers to have graduated from a truck driving school and they provided on-the-job training (**OJT**) ranging from four weeks to six months. Six reported that they operate their own company schools.

Thirteen (13) were school programs. All reported offering classroom

instruction and **both** range and on-street practice. The average duration for the proprietary schools was 235 hours; for the publicly funded schools it was 334 hours.

Five motorcoach exemplary training programs were identified, all carried out by Long Haul Regular Route motor carriers. These companies were medium in size to very large and the schools ranged in duration from 152 hours (including 50 hours on-the-job) to 250 hours.

Four school bus exemplary programs/activities were identified, but only one was a formal training program. **The** program had a total duration of **40** hours with 10 hours of actual **behind-the-wheel** time per student.

Proportionally more exemplary training programs/activities were identified by the heavy truck group. Possibly one reason is that the training of drivers has higher visibility in the trucking industry due to the public attention that has been focused on truck safety in the last few years.

Adequacy. We determined adequacy scores for the exemplary formal training programs. The Overall Adequacy Scores (**OASs**) were as follows:

- For heavy trucks, the **mean OAS** across the 17 programs was **-11** (i.e., the sub-scores were, on average 11 percent below the criterion values). Seven of the programs (41 percent) were adequate, i.e., had zero or higher Overall Adequacy Scores.
- For motorcoaches, mean OAS for the five programs was **-1.6**. Two of the five programs had an OAS of zero or **higher**.
- The OAS for the one exemplary school bus program was **+16.1**.

Sampled Training Programs/Activities. Within the Industry Survey groups, with one exception, **only** the motor carriers and schools actually trained drivers, i.e., had formal training programs or training activities. The one exception was the teamsters union, which does provide formal training.

Prevalence. Table 4 compares the three domains in terms of the proportions of each that hire entry level drivers, and that provide either formal training or training activities for them.

While over half of the heavy truck and motorcoach motor carriers hire only experienced drivers, over 95 percent of the school bus fleets hire entry level drivers. **Also**, not only are the heavy truck motor carriers least likely to hire entry-level drivers, they are also the least likely to provide formal training for them, once they are hired.

Concerning the sizes of the fleets reporting formal training:

-**Heavy truck carriers** of all sizes report that they provide formal training, but 56 percent of the fleets in our sample larger than **200** drivers provide formal training, while only six percent of the smaller companies do.

-Motorcoach carriers of all sizes reported that they provide training. LHRF fleets as small as 15 drivers, and C/T fleets as small as nine drivers, reported having formal training.

-School bus fleets of all sizes offer formal **training**.

Sea End of Report for Table 4

Effectiveness. Table 5 summarizes the adequacy score data for the random samples of formal training programs across the three domains.

The tabulation shows that, for heavy trucks, the mean Overall Adequacy Score (OAS) for the schools was substantially lower than the mean OAS **for the** company operated programs.

Comparing company programs across the three domains, it is clear that **the** heavy truck company programs group has the highest mean OAS. On average, they were about 20 percent above the criterion values, as compared to only about 2 percent for the school bus programs and a minus 17 percent for the **motorcoach** programs. Also, more of the heavy truck company programs scored zero or better.

Plans for the Future. The following summarizes the plans for future training programs and activities reported by our Industry Survey groups:

- Within the heavy truck domain, only **10** percent of the for-hire fleets and 16 percent of the private fleets had plans. **Generally**, these plans were vague and uncertain, beyond obtaining and showing videos and hiring instructors.
- Only about 14 percent of the motorcoach motor carriers had any plans, and these were for training activities. The activities mentioned included a defensive driving course, videos, safety meetings and a driver recertification program.

See End of Report for Table 5

- Only about one-third of the school bus motor carriers have plans for future training activities. Three of the operators are uncertain what they are going to do and two expect to implement formal training courses.

Size of the Industries

The following tabulation provides estimates of the number of motor carriers and drivers in each of the three domains;

| | Heavy trucks | Motorcoaches | school buses |
|-------------------------|--------------|--------------|--------------|
| Number of fleets | 230,000 | 5,000 | 14,700 |
| Number of drivers | 5,600,000 | 156,000 | 742,000 |

Each of the domains may be further characterized as follows:

- Heavy truck fleets and drivers are approximately equally divided between for-hire and private motor carriers (including **specialized** fleets, e.g., fleets operated by utility companies, construction companies and refuse haulers). There are about 100,000 owner-operators.
- Of the 5,000 motorcoach fleets presently in operation in the United States, about **114** are Long Haul Regular Route carriers who employ about 9,400 drivers.
- The 14,700 public school districts that bus students are divided into 3,280 private fleets (contractor operated) and 11,420 public fleets (school system operated). As to the number of drivers, for private fleets this estimate is 262,400 drivers and for public fleets, 479,700 drivers.

Relationship Between Training and Accident Reduction

The Industry Survey representatives, the motor carriers and the schools were asked for any data they had demonstrating the relationship between training and accidents. Three heavy truck motor carriers reported in-house studies indicating that training reduced accidents. None of the motorcoach or school bus respondents were able to identify relevant studies.

Early in this project, a literature search was carried out to determine, in part, the extent to which driver training impacts accidents. Two studies were found that reported accident reduction following school bus driver training: One reported a 23 percent decrease in accidents and the other a 22 percent reduction in driver at fault accidents, during a period in which the number of miles driven doubled. They were no studies providing information on the link between training and accident reduction for motorcoach drivers.

However, four other studies found that formally trained drivers reported having the same or slightly more accidents than drivers trained informally. The earliest study was published in 1979. It reported, based on a survey of U.S. truck drivers, that trained drivers indicated having more accidents than drivers who were not trained. The Regular Common Carrier Conference (RCCC) asked truck drivers about the training they received and

their accident experience as part of the motor carrier safety surveys they conducted in 1967, 1968 and 1969. Analysis of the 1986 survey responses (878 combination truck drivers) showed that 41 percent of the trained drivers had a truck accident in the previous five years, compared to only 32 percent of the drivers without formal training. This was a statistically significant result (.05 level). A similar result was obtained in the previous year's survey (1,762 interviews), although no detail was provided. The 1989 survey showed about the same level of accidents for trained (27 percent) and non-trained (29 percent) drivers.

A GAO report describes the wide variation in truck driver training and the RCCC citations make the point that this variability may mask the effect of good training. They indicate that their finding "... points to the need for establishing and maintaining high standards so that drivers are taught accident-reducing skills, rather than given a false sense of security."

In this study, data on drivers' accident history was also collected. Here also, the formally trained drivers reported having somewhat more accidents, across all three domains. It was expected that drivers whose training scored as adequate (i.e., an OAS of zero or higher) would have fewer accidents than those whose training scored lower. However, there was no suggestion of a consistent relationship between training adequacy and accidents in the data. In fact, they were individual drivers reporting one or more accidents who had relatively high adequacy scores.

The Impact of Mandated Training on the Industries

Table 6 summarizes the responses of the Industry Survey respondents in each of the three domains to the eight questions related to the condition of the industries and the impact of mandated training.

Existence of Other Government Programs

This research area addresses the potential impact of the CDL and the identification of other Federal government programs that might interact, conflict or be redundant with mandated training (or some other intervention strategy).

Potential Impact of the CDL. Data relating to the impact of the CDL came from our survey respondents from the Industry, School and Driver Surveys, and the ANPRM commenters.

Industry and Schools Surveys

Findings. We asked our Industry and School Surveys respondents, "What effect, if any, do you think CDL testing will have on the likelihood that entry-level [name of domain] drivers will be adequately trained?" Almost 65 percent of the heavy truck sample, 74 percent of the motorcoach sample and 64 percent of the school bus sample said it would increase the likelihood.

Driver Survey Findings. We asked our drivers who began driving on or after the time when the CDL went into effect, "How well did your training prepare you for the CDL [Knowledge or Skill] test?" The responses were as follows:

- For the knowledge test question, the most frequent response [across all domains] was, "Gave me somewhat more knowledge than I needed."
- For the heavy truck and school bus samples, the most frequent response to the skill test question was "... somewhat more practice than I needed." For the motorcoach sample it was, "Gave me just enough practice."

See End of Report for Table 6

Other Government Programs Potentially Impacting an Intervention. Two listings of government programs/initiatives were identified, in addition to the CDL, that will or could interface with any FHWA program/initiative to reduce CMV accidents. The first listing identifies those government agencies that regulate the activities of fleet operators/drivers and/or make requirements concerning training, recordkeeping and reporting. Any mandated entry level heavy truck driver training curriculum or standard, and the program structure to administer the requirement should be consistent with (i.e., not conflict with) these existing Federal requirements. This listing is as follows:

- Interstate Commerce Commission. Regulations, as well as recordkeeping and reporting requirements
- Research and Special Programs Administration. HAZMAT training, inspection and enforcement
- Environmental Protection Agency. Worker Protection Standard, SARA

Title III requirements, and the Clean Air Act Emergency Response Plan -Occupational Health and Safety Administration.

Hazard Communication Standard

-Federal Highway Administration. Federal Motor Carrier Safety Regulations, as well as recordkeeping and reporting requirements

The second listing presents potential sources of funding to drivers, employers and/or schools. Any program to administer a mandated training requirement should be developed with such funding sources in mind, in order to mitigate the economic impact of mandated training and facilitate acceptance of the **requirement**. We identified two potential sources of **funding**:

- Department of Education. The Literature Review Report describes the changes in the Title IV funding and its negative impact on both schools and persons wishing to enter training as a heavy truck driver. ANPRM respondents suggested that there is a need for **further changes** to the Title IV if it is to support a mandated training requirement.
- Department of **Labor**. The Job Training Partnership Act (**JTPA**) provides block funding to states and local jurisdictions. The states, in particular, could be encouraged to make use of **their** JTPA funds in support of the mandated training, should FHWA implement the requirement.

Responses to the ANPRM and Conclusions

A total of 96 letters, signed by 104 persons, were received in **response** to the ANPRM. Of these **104 respondents**, 65 were associated with the trucking industry (including 34 motor carriers), **16 were from the school bus industry**. one represented a motorcoach association, 16 were associated with state government, and 8 were other.

The ANPRM **solicited responses** to thirteen (13) questions. In addition to or instead of responding to the questions, many-of the persons **responding chose** to address other topics related to the subject area. Analysis of these **responses** indicated that they related to four general issues.

In the summary that follows, only the questions with high response rates **are** included. Several questions relating to how adequacy should be defined and what standards exist for determining adequacy have been combined, **since** similar answers were provided to these questions. The questions have been

abbreviated to save space. The section ends with a summary of the four general issues. Refer to Responses to the ANPRM in Volume II for the complete text of each question and an individual summary of each question/issue.

Defining Standards for Adequacy of Training (Questions 1, 2, 4 and 8)

A total of 9 standards were identified. By far, the two most frequently mentioned standards were the **FHWA Model Curriculum** as embodied in the Professional Truck Driver Institute of America, **Inc. (PTDIA) Standards**, and the CDL Licensing Standards. The PTDIA standard includes classroom instruction, range practice and on-street practice totaling **147.5** per-student hours. This is equivalent to the 320 class hours required by the FHWA Model Curriculum. The CDL tests consist of a general knowledge test, specialized knowledge tests, a vehicle component inspection and a road test.

What an Adequate Training Program Should Include (Question 3)

The most frequent response from the truck group respondents (made by 22 of the 38 respondents) was that the program should conform to the **FHWA Model Curriculum/PTDIA Standard** (for both content and hours). Several of these persons indicated additional topics, or thought the curriculum should be updated.

The motorcoach respondent offered topics, indicating **that** they apply to both trucks and buses. The only school bus group response **came** from an association, which provided the outline for a school bus driver **training** program they **are** supporting.

The most frequent suggestion for program methods was to emphasize **behind-the-wheel** instruction.

Adequacy of the CDL in Measuring Driver Performance (Question 5)

One-third of the 64 commenters responding to this question think the **CDL** tests accurately measure a driver's performance. Roughly one-third of the commenters answered "Yes," if the **CDL were** modified in a specific way. The **remaining** one-third did not think the CDL tests accurately measure a driver's performance.

By far, the **most common reason** given for supporting the CDL was the respondent's belief that the tests are sufficiently comprehensive to accurately measure a driver's performance. Those who qualified their support most **frequently** indicated the need for additional training and/or the need to test additional **knowledge** and skills.

Should Training be Federally Mandated? (Question 6)

Over 93 percent of the 104 respondents addressed Question 6. Overall, they were against mandating training by a margin of two-to-one. However, there were important differences among the groups:

- The **Truck groups** were mixed:
 - The **Schools/School Association** group (**11** respondents) was **two-to-one** in favor of the mandate.
 - The three union respondents were also in favor of the mandate.
 - All of the other truck groups (48 respondents) were against.
 - The **Bus groups** were unanimously against.
 - The **State Government and Other groups** were equally divided.
- The most frequently mentioned reasons in favor were that, if training was not required, the carriers and schools generally would not comply; regulations need to be set; and the **FHWA/PTDIA Standard** exists as a starting point.

The most **frequent** reasons against were that the CDL exists and is sufficient; mandated training will increase costs for carriers; and the schools and carriers have or will provide **quality** training on their own **because** it is in their best interest. The school bus operators indicated that they do not favor mandated training because the state-required **training** is sufficient.

General Issues

The four general issues identified from the **comments** of the ANPRM respondents were as follows.

Program Administration. About half of the 16 state government respondents see the need for the states to develop costly programs for certifying and monitoring **training** courses. Three commenters indicate that maintaining **records** also will **be** expensive. Some **question** who will fund the program and whether the enormous cost would outweigh the benefits.

Program Quality/Cost and Who Will Pay. A frequent comment was that **the** cuts in the Federal Student Loan program have reduced student access **to** **CMV driver training** and **reduced** the duration and quality of the courses. Four commenters indicate that the government should do more to help students acquire the funds they need to attend school.

Broadening the Requirement. Twelve (12) persons provided comments, **indicating** that the **requirement** should also **include** hazardous **materials training**, and the **training** of transit bus, **Longer Combination Vehicle (LCV)**, and

foreign drivers. Two respondents recommended screening existing drivers and providing training for those with problems. Effect on Specialized Fleets. Five (5) private fleet respondents indicated that

special fleets have special training requirements and that a generic mandatory training standard, centered around the training needs of over-the-road freight haulers, would not be suitable. Training to this standard

would be irrelevant to their needs, and costly.

Tables 1 through 6 follow.

Executive Summary

TABLE 1 .-SUMMARY OF TRAINING ADEQUACY FINDINGS FOR MOTOR CARRIERS

| | Heavy trucks | Motorcoaches | School buses |
|---|--------------|--------------|--------------|
| Percent of motor carriers hiring entry-level drivers that provide formal training for them | 21.6 | 62.5 | 71.2 |
| Percent of motor carriers sampled whose formal training was judged as "Adequate" | 37.5 | 29.6 | 33.3 |
| Estimate of the percent of motor carriers hiring entry-level drivers that provide adequate training ... | 8.1 | 18.5 | 23.7 |

TABLE 2.-SUMMARY OF TRAINING ADEQUACY FINDINGS FOR DRIVERS

| Formal training methods, by domain ¹ | Percent drivers trained ² | Percent programs adequate | Percent drivers adequately trained ³ |
|---|--------------------------------------|---------------------------|---|
| Heavy trucks: | | | |
| Proprietary | 47.5 | 44.8 | 21.3 |
| Public funded | 7.8 | 54.5 | 4.2 |
| Company/military ⁴ | 6.4 | 87.5 | 5.6 |
| Total | 81.7 | 50.0 | 31.1 |
| (Sample Size) | (141) | | |
| Motorcoaches: | | | |
| Company ⁵ | 50.0 | 38.4 | 18.2 |
| (Sample Size) | (22) | | |
| School buses: | | | |
| Company | 58.8 | 58.8 | 34.5 |
| Other | 17.2 | 0.0 | 0.0 |
| Total | 75.9 | 45.5 | 34.5 |
| (Sample Size) | (29) | | |

¹ This analysis includes only "New" drivers, i.e., drivers with five or fewer years experience.
² Values are percent of the sample size, which includes both formally trained and other trained drivers.
³ See text for a description of how these values are calculated.
⁴ These groups were combined because they include only nine cases, four military and five company.
⁵ Motorcoach drivers sampled reported only company programs as their source of formal training.

TABLE 3.—SAMPLE SIZES FOR EACH DOMAIN

| | Heavy trucks | Motorcoaches | School buses |
|---------------------------------|--------------|--------------|--------------|
| Industry survey: | | | |
| Associations | 2 | 2 | 3 |
| Insurance companies | 11 | 5 | 5 |
| Motor carriers | 62 | 22 | 22 |
| Schools | 24 | | |
| School survey | 41 | 27 | 30 |
| Exemplary programs | 27 | 5 | 4 |
| Driver survey | 371 | 43 | 50 |

TABLE 4.—INCIDENCE OF ENTRY-LEVEL TRAINING BY DOMAIN

| | Heavy trucks | Motorcoaches | School buses |
|----------------------------------|--------------|--------------|--------------|
| Master sample size | 272 | 155 | 214 |
| Percent of sample that: | | | |
| Hire experienced drivers | 592 | 53.5 | 4.2 |
| Hire entry level | 40.8 | 46.4 | 95.8 |
| Provide no training | 1.8 | 9.0 | 2.3 |
| Do provide training | 39.0 | 37.4 | 63.5 |
| Training activities | 30.2 | 8.4 | 25.3 |
| Formal training | 8.8 | 29.0 | 88.2 |

TABLE 5.—SUMMARY OF TRAINING PROGRAM ADEQUACY SCORES BY DOMAIN

| | Heavy trucks | | Motor-coaches | school buses |
|--|-----------------|------------------|------------------|------------------|
| | School programs | Company programs | Company programs | Company programs |
| Sample size | 41 | 24 | 26 | 30 |
| Mean overall adequacy score (OAS) | -7.2 | 20.6 | -16.6 | 2.3 |
| Percent adequate (i.e., OAS zero or above) | 22.0 | 39.1 | 29.6 | 33.3 |

TABLE 6.—SUMMARY OF INDUSTRY IMPACT QUESTIONS BY DOMAIN

| Industry impact questions ¹ | Response index values ² by domain | | |
|--|--|--------------|--------------|
| | Heavy trucks | Motorcoaches | School buses |
| Condition of motor carriers: | | | |
| Present condition, as compared with five years ago [Range: Much worse off (-2) to much better (2)] | -0.47 | 0.00 | -0.06 |
| Effect of mandated training [Range: Hurt (-1) to Help (1)] | -0.03 | 0.15 | 0.06 |
| Condition of drivers: | | | |
| Present condition, as compared with five years ago [Range: Much worse off (-2) to much better (2)] | -0.13 | 0.19 | 0.61 |
| Effect of mandated training [Range: Hurt (-1) to help (1)] | -0.33 | 0.66 | 0.45 |
| Driver turnover as a problem: | | | |
| Degree of seriousness [Range: No problem (0) to serious problem (-3)] | -1.99 | -1.73 | -1.93 |
| Effect of mandated training [Range: greatly increase turnover (-2) to greatly reduce turnover (2)] | 0.21 | 0.36 | -0.04 |
| Driver shortage as a problem: | | | |
| Degree of seriousness [Range: No problem (0) to serious problem (-3)] | -1.59 | -1.56 | -1.69 |
| Effect of mandated training [Range: greatly increase shortage (-2) to greatly reduce shortage (2)] | -0.14 | 0.19 | -0.30 |

¹ The actual phrasing of these questions, as they appeared in the Industry Surveys, are presented in Volume III, Sections 3, 4, and 5.

² See the Volume III, Section 7 for a description of how the Response Index values were calculated.