

entering the sample is different for trucks, the ICC segment uses \$250, while the practice for passenger cars varies. Thus the results should be considered as rough estimates which are believed, however, to be useful for gross comparison. They also point the way toward needed improvements in data collection and methodology.

Comments on the MSS.—System safety is compared in terms of general accident rate for All Accidents, Fatal Accidents, and Fatalities to Vehicle Occupants. A few comments on the results are in order.

Overall Accident Rate.—In respect to general accident involvement rate the truck system has the best safety record with 1510 accidents per hundred million vehicle miles, as compared to 3000 for cars and 4310 for buses.

Fatal Accidents.—A fatal accident is defined as producing one or more fatalities. The bus system produces the highest rate of fatal accidents (9.5/100 MVM) compared to 5.7 for trucks and 6.7 for autos. The fatal accident rates in all cases are greater than the occupant fatality rates because "other" people being killed are included in the fatal accident classification.

Occupant Fatalities.—The MSS shows that the truck and bus fleets are less hazardous to occupants than the passenger car. The passenger car fleet produces an occupant fatality rate about twice that of the truck or bus system. Considering that buses have many more occupants exposed per vehicle mile, the bus safety record is amazingly good. In this respect the truck record is relatively poorer as the occupants (including drivers) appear to be more vulnerable on the basis of number of persons exposed. One possible explanation for the high truck driver fatality rate is that, at least in the ICC part of the sample, a high proportion of drivers (35%) were killed in truck to truck collisions which is a severe class of accidents, while 43% were killed in single vehicle truck accidents, also very severe.

Comparisons with the Select ICC Group.—The Interstate Commerce Commission (ICC) has for many years compiled accident data on large¹ interstate, common and contract motor carriers. The reporting of these accidents by common and contract operators is required by ICC; however, filing accident reports is not required of other private carriers. The ICC has, however, applied identical safety regulations to both common and private carriers and data on this group probably represent the most safety conscious segment of the trucking industry. It is assumed that because of the higher order of driver selection and training, vehicle maintenance, and general operating practices of this select group of common and contract carriers that their safety record is better than the industry as a whole. It is important to remember that the measure of system safety developed here is concerned with the total U.S. truck fleet with all its "mongrel" mixture of vehicle sizes, types, and locations (urban, suburban, rural). The performance of the very select group of ICC regulated interstate carriers thus may serve to set goals and good practices; it produces about 30,000 truck accidents per year, as compared with almost 3,000,000 in the above MSS sample. Thus ICC's coverage is only about 1% of the total truck accidents. Miles travelled per year, for ICC's group, are about 11,000,000,000 as compared to 183,000,000,000 or 6% of the general truck fleet mileage. The following ICC group experience for 1964 is taken from a report of 30,267 accidents in which 1492 people were killed, 215 of them being carrier drivers with miles travelled being 9,535,579,000 (5). The average rates developed by the ICC segment for 1964 were 2.25 driver fatalities, and 15.65 total fatalities² per 100,000,000 Vehicles Miles, and 817 accidents per 100,000,000 Vehicle Miles. This shows that the accident involvement rate of the ICC group is only about 1/5 of the general fleet as shown in Table 3.

In comparing the general truck fleet with the special ICC carrier group it is noted that the driver fatality rate of 2.25 per 100 MVM for the ICC group corresponds very closely with the 2.6 rate for the general fleet by the MSS method. The equality of the common carrier driver fatality rate with the industry average is an enigma to the author—it may be that the greater speeds and greater severity of accident patterns in intercity travel overshadow some of the other factors of urban accidents even though there is preponderance of trucking operations in intrastate and urban travel. It is known, for example,

¹ "Large" means those carriers having an annual operating revenue of \$200,000 or more. In 1964 there were 3,343 carriers reporting in this class.

² Total fatalities here is not the same as Fatal Accident of Table 3, as total fatalities of the ICC group include pedestrians, cyclists, train occupants, etc.