

Both of the foregoing rates are seriously and adversely affected, compared to the national death rate, by the fact that exposure is limited to only the mileage developed by them and do not contain the mileage of all of the other vehicles they met and traveled with during the time in which they developed their mileage as is done in arriving at the national death rate. Consequently, a death rate for any given vehicle or group of vehicles developed by using only the mileage covered by that vehicle or group of vehicles cannot be compared with the national motor vehicle death rate. The exposure factor in the two is entirely different, thus the rate is different.

Finally, attention is called to the incontrovertible fact that in and of itself "involvement" is not true measurement of the safety record of any person, fleet or group. Any vehicle, even a legally parked one, can be "involved" in an accident. In final analysis, who or what caused the accident is the only true measure. However, until there are records from which "at fault" determination can be made nationally, the trucking industry like all other vehicle owners must rely on available information.

A MEASURE OF SYSTEMS SAFETY

In this same vein, however, there has been a constant and unrelenting search for an adequate scientific measurement of safety that can be applied to each of the types of vehicles that make up the traffic in this country for the purpose of comparing their safety records.

In a presentation before the National Midyear Meeting of the Society of Automotive Engineers in Detroit, Michigan on May 24, 1968, Dr. Robert A. Wolf, Automotive Crash Injury Research, Cornell University, developed such a scientific Measurement of System Safety Performance. That portion of his presentation titled "Truck Accidents and Traffic Safety—An Overview", which is devoted to the measurement of safety performance, is attached to this supplemental statement.

It is obvious that the safety measurement system proposed by Dr. Wolf promises to afford an opportunity for comparison of the safety record of the various types of vehicle fleets which make up the traffic flow as for the first time the elements which go into the equation are the same for each type. The results from the formula, using data available now, speak for themselves.

TRUCK ACCIDENTS AND TRAFFIC SAFETY—AN OVERVIEW

(By Robert A. Wolf, Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.)

THE TRUCKING SYSTEMS SAFETY PERFORMANCE

A Gross Measure of System Safety.—How does the trucking fleet's safety record as a whole compare with passenger carrying vehicles? Any evaluation must rest on a comparison as there is no absolute standard. The number of vehicles in the national truck fleet is different, they are less homogeneous in type and size and the fleets have different levels of activity. The trucking system has a direct economic purpose rather than one of convenience or pleasure, its drivers are different, their travel patterns are different, etc. What kind of a meaningful indicator would one use to make the comparison?

An attempt is made here to construct a measure of system safety in which the goal is to compare the overall safety performance of three classes of highway transport; trucks, buses, and passenger cars, by means of a gross Measure of System Safety (MSS). The means sought, for these comparisons, is a rate; this should relate somehow not only to the number of annual accidents or injuries but also to the level of transportation activity of each class of transport. Property damage, although of economic importance, is not included in the safety index.

One can easily create a formula (conceptual analytical model) to incorporate these effects, but alas, accurate and complete data to enter into the formula do not exist. It is possible, however, to utilize some of the existing data to provide a crude overall safety performance index by computing gross accident rates and fatality rates for trucks, buses, and passenger cars. The rate is expressed in number of annual unsafe events (N_E) per unit of miles travelled per year ($N \cdot A \cdot Y$) for the entire national fleet of vehicles in each class. Therefore, it adjusts for differences in the total number of vehicles and the differences in total