RESOLUTION NO. 38 CONCERNING SEAT BELTS

[CM(78)18]

The Council of Ministers of Transport, meeting in Brussels on 31st May and 1st June 1978,

HAVING REGARD to the report of the Committee of Deputies on the effects of the compulsory wearing of seat belts.

REFERRING to Resolution No. 28 of 14th June 1973 on the problem of seat belts.

CONSIDERING:

- That in practically all the ECMT countries the effectiveness of seat belts is no longer open to question.
- That 14 Member countries have taken measures for compulsory wearing of seat belts in accordance with Resolution No. 28.
- That these decisions have significantly contributed to the decrease in road deaths and injuries recorded in most Member countries in recent years.
- That compulsory wearing of seat belts is one of the most cost-effective measures that can be taken for road safety.
- That in no ECMT Member country does the Constitution seem to preclude provision for compulsory wearing of seat belts.
- That three-point inertia reel belts (the type which is judged most convenient at the present time) are now very commonly used in many Member countries.
- That various studies conducted in several Member countries have shown that when car occupants wear their seat belts correctly, the risk of their being killed if involved in an accident is reduced by at least half and the severity of their injuries is also very distinctly reduced.
- That foregoing studies have also shown that the risk of death or injury rises appreciably when the impact takes place a high speeds.
- That there can be no doubt that when impacts take place at very high speeds, even the wearing of seat belts fails to provide effective protection for car occupants and, in consequence, that:

  - Very high speeds must be avoided.

  - Compulsory wearing of seat belts and general speed limits work complementarily for the improvement of road safety.

- That objections to the wearing of seat belts on medical grounds are exceptional.

- That measures for compulsory wearing of seat belts have won widespread compliance only when there was also adequate enforcement by the police and limited, but quick, penalties for offenders.

- That less binding measures limited to the recommendation that seat belts should be worn do not usually achieve more than 20-30 per cent compliance despite intensive information and publicity campaigns; that this rate generally drops fairly steeply when the campaigns are over; that some incentive devices (e.g. "bleeps" and warning lights inside vehicles) can be useful but should be regarded only as adjuncts to compulsion; that standard fitting of emergency devices for immediate release when belt fastenings are damaged in the course of an accident could make motorists feel safer and so dispel remaining reluctance on this point.

- That in some countries, the question whether car occupants were or were not wearing seat belts is taken into account by insurance companies and the courts when awarding damages for car accidents.

IS OF THE OPINION THAT the target of every country's policy in this field should be that, within a reasonable time span, all motor vehicle occupants – except for public transport vehicles and relatively limited special cases - should be protected by seat belts.

RECOMMENDS the Member countries of the ECMT:

1. To continue to introduce regulations for the fitting of seat belts in new vehicles, preferably three-point belts where three-point anchorage is technically feasible and, in particular, gradually to extend these provisions:

   - To the back seats of private cars[1].

   - To light weight commercial vehicles.

   - At a later stage, to other categories of commercial vehicles.

2. To encourage the fitting of three-points inertia reel belts, these being more convenient and, consequently, more easily accepted.

3. To proceed at national level on the principle of compulsory wearing of belts1 as this secures much wider compliance than mere recommendations to this effect even if they are supported by intensive information and publicity campaigns.

4. To consider that compulsory wearing of seat belts must apply to car occupants both inside and outside built-up areas.

1. The Italian delegation has entered a reservation on this point

5. To ensure that wearing of belts is effectively enforced by the police and, if possible, provide for limited but quick penalties for offenders.

6. To continue their information and publicity campaigns for the wearing of seat belts even if this has been made compulsory; to renew these campaigns, notably when compliance falls significantly; in the course of road safety education at school and in driving schools, to draw attention of future car users to the importance of wearing seat belts.

7. To make the wearing of seat belts compulsory, for anyone whose age, body measurements, and physical condition enable him to do so; to make provision to the effect that children who cannot be fastened with seat belts shall be carried in rear seats unless they can be provided with special front-seat safety devices to suit their case.

8. To encourage the fitting, in new vehicles, of "bleeps" or warning lights to remind car occupants when they fail to fasten their belts, and - when advances in technical design make this possible – the fitting of approved emergency devices for quick release when the standard belt coupling is damaged in the course of an accident.

9. To secure the adoption as soon as possible at national level of the decisions taken on uniformity of technical standards by the international organisations concerned, more especially those relating to belt coupling; to continue the studies and research for improving the effectiveness and reliability of existing belts and of any device whereby belts can be better adapted to their users' body measurements, whilst also working gradually for international uniformity of belt specifications.

INSTRUCTS the Committee of Deputies to keep the application of the measures recommended in this resolution under review and to study their effects.

REPORT ON THE EFFECTS OF SEAT BELTS

[CM(78)18]

INTRODUCTION

In December 1972 the Council of Ministers of ECMT approved a new programme of work concerning road safety [CM(72)19]. This included "the compulsory wearing of seat belts".

A Resolution with six recommendations urging Member countries to make the use of seat belts compulsory was submitted to the Council of Ministers at its session on 14th June, 1973 [CM(73)7].

This report tries to give some evaluation of the actions taken by Member countries as a consequence of these recommendations.

At the 57th Session of the Road Safety Committee it was decided to prepare a report on the present situation and trends with regard to the legislation, wearing rate, trends in research, insurance aspects, etc. The Netherlands Delegation was asked to prepare a draft questionnaire for this purpose.

At the 58th Session of the Committee various amendments and suggestions were submitted with regard to the draft questionnaire [CS/SR(77)2]. The Committee decided to revise the questionnaire accordingly and the revised version was sent to Member and Associate Member countries in May 1977.

Replies were received from 20 countries, viz. Luxembourg, Belgium, Austria, Germany, Denmark, Australia, Portugal, Switzerland, Spain, Yugoslavia, Finland, Greece, Norway, Ireland, Italy, Sweden, Japan, France, the Netherlands and the United Kingdom.

Some countries have given very detailed studies and reports. Although the contents of these reports are highly relevant, it is not possible to provide data from these reports in this document. Therefore a reading list is added which enables everybody to see which studies and reports are available.

PART A

RESULTS OF QUESTIONNAIRE ON SEAT BELTS

1. In 4 of the 20 countries, which replied, the wearing of seat belts is not compulsory[*] (Yugoslavia, Ireland, Italy and Japan). In Greece the wearing will become compulsory on 16th December, 1979. It is a fact, however, that in all countries concerned the passenger cars have to be equipped with anchorage points.

As to the carrying of children in motor-cars there do not exist special rules in Portugal, Yugoslavia, Finland, Spain, Norway, Ireland, Italy and Japan. In the other countries the following rules apply:

"prohibition to carry children below a certain age on a front seat (when a rear seat is present)":

Luxembourg	10 years
Belgium	12 years
Germany	12 years
Australia (some States)	
Switzerland	12 years
France	12 years
Yugoslavia	10 years
Austria	12 years
Netherlands	12 years
Greece	10 years

In the three last-mentioned countries this prohibition applies as far as no special arrangements have been made for the front seat.

In Sweden, Denmark, Norway and Finland the compulsory wearing of seat belts only applies to persons of 15 years and older, in Australia (such depending on the State) to children of 8 years and older persons.

2. As already said all passenger cars have to be equipped with anchorage points, but in various countries this obligation also applies to other motor-cars up to special weight. In this type of motor-car the wearing of seat belts is also obligatory, in most cases for the front seats. In Denmark, Finland, Norway and Sweden wearing is compulsory for those front seats where a seat belt is attached.

[*] Since September 1977, the Swiss Federal Court has decided that the legal grounds on which compulsory wearing of seat belts had been introduced were unsound. The Swiss authorities are taking steps to remedy this state of affairs.

3. In most countries all types of seat belts are admitted. From the inquiry it appears that in general the 3-point belt is preferred. In some countries this type is prescribed with the exclusion of other types, except for cases in which no 3-point belt can be fitted, e.g. if a seat is not adjacent to a door.

Seat belts are subject to certain quality standards; in only a few countries do rules exist as to how belts should be fitted in vehicles.

4. In only a very few countries rules have been laid down as to the uniformity of the locking of the seat belt, but conformity with certain requirements is generally required.

5. In most countries the obligation to wear seat belts does not apply to drivers while reversing their motor vehicles, taxi-cabs, persons shorter than 1.50 m., drivers delivering and picking up goods at short intermediate distances.

In some countries an exception is made for vehicles of emergency services, such as police cars and fire engines (Austria and Finland).

In a single case driving instructors are exempted from the obligation (Austria).

Almost all countries concerned have issued exemptions on medical grounds, however, in general the grounds themselves are not mentioned.

In only a few countries pregnant women are exempted from the obligation, an exemption on physical grounds has not been mentioned at all.

A certain procedure for the application of an exemption from the compulsory wearing has not been mentioned. In most cases a medical certificate will do.

In Australia (such depending on the State) the obligatory wearing does not apply to persons over 69.

In the Netherlands arrangements are being made to introduce an exemption clause into the seat belt legislation. As far as can be expected the largest number of exemptions will be based on physical grounds, e.g. a concentration camp syndrome, next to the physically heavily handicapped persons. In the Netherlands so far approximately 800 applications have been received.

6. In most countries the introduction of the compulsory wearing was preceded by a publicity campaign through the mass media which in most cases lasted approximately 6 months.

In Germany and Sweden, however, the publicity campaigns took some years.

Amounts spent on publicity:

Austria	3 million Schillings
Germany	13.3 million DM
Norway	6 million Crowns
Netherlands	1.5 million Guilders
France	3.5 million Francs

7. In most countries penalties are imposed for not wearing seat belts. In Austria this infringement is treated as a civil suit, in Finland prosecution will follow if the offender refuses to wear the seat belt after

being warned by a police officer. In Germany, Norway and, recently, Switzerland the offender is not prosecuted.

If we compare the various countries in which the wearing of seat belts is compulsory, it appears that in about halt of the countries a transition period is taken into account, in which no punishments were inflicted. As far as indicated the fines range from Frs. 20 to 160. In Australia (such depending on the State) one "demerit" point is given. About the number of warrants made until now nothing is known. In Sweden in 1975 approximately 18,000 persons have been fined because of not wearing the seat belt. In France this number amounted to 108,036 in 1975 and to 136,657 in 1976.

8. In most countries scientific research was and/or is being made into the effect of the wearing of the seat belt. In general it may be deducted from this research that as a consequence of the wearing of seat belts the number of road victims killed has decreased.

The percentage of this decrease cannot exactly be indicated. This is also caused by the fact that the belt is not always worn in a proper way (through which according to Swedish investigations only 30 - 50 per cent of the effect is obtained).

In Belgium an investigation was made into the attitude. Inter aim drivers have been divided into social class and age. In general the Belgians are positive on the wearing of seat belts. In most cases the lack of freedom of movement is mentioned as a reason for a negative attitude.

In Switzerland, Australia, France and the Netherlands extensive research has been carried out. It would go too far to publish all reports in this summary.

According to a Swiss report, frontal impacts account for over 50 per cent of all collisions. It was also found that approximately 40 per cent of the drivers killed in 1976 were wearing seat belts. In 1977, the "wearing rate" was approximately 77 per cent.

A study of accident trends in Australia shows that over a five-year period, the number of persons injured had fallen by 20 per cent and the number of killed by 27 per cent.

To judge the effects of wearing seat belts in France, comparative fatality rates for wearers and non-wearers of seat belts have been calculated for several years on the basis of data collected by the various government departments concerned. The coefficients thus obtained (see below) show that car occupants involved in accidents reduce the risk of being killed by more than half if they are wearing seat belts.

	1974	**1975**	**1976**	**1977** (first 10 months)
Fatality rate for belted occupants	1.92%	1.97%	2.3%	2.28%
Fatality rate for non-belted occupants	4.24%	5.30%	6.08%	4.92%
Fatality rate for non-belted occupants as compared with that for belted occupants	2.21%	2.69%	2.63%	2.15%

In the Federal Republic of Germany, the conclusion drawn from an insurance group's survey of 15,000 motor accidents involving casualties in 1974 was that, assuming a "wearing rate" of 90 per cent and assuming that all vehicles were fitted with front-seat belts, the casualty figures as compared with those for 1976, would be reduced (on a cautious estimate) by the following amounts:

- 40 500 for car occupants slightly injured.
- 17 800 for car occupants seriously injured.
- 1 700 for car occupants killed.

In the Netherlands, an extensive analysis of 22 000 accidents has shown, among other things, that the use of lap belts and three-point belts are equally effective. An explanation of this finding in the light of experience is that lap belts are worn more correctly and more tightly than three-point belts (and correct wearing of seat belts is of vital importance).

9. **Number of occupants of motor-car killed**

COUNTRY	1970	1971	1972	1973	1974	1975	1976	DATE OF INTRO-DUCTION OF WEARING OBLIGATION OF BELT
Belgium	768	926	986	979	893	795	828	1.6.75
Austria	873	1,203	1,173	1,177	946	960	882	15.7.76
Germany	9,457	9,108	9,457	7,820	6,616	7,050	6,850	1.1.76
Australia (only drivers)	1,460	1,380	1,234	1,317	1,299	1,380	-	in various states 1970-1972
Switzerland	669	668	672	561	515	508	443	1.1.76
Spain	2,246	2,405	2,498	2,769	2,454	2,574	-	23.4.75
Finland	410	463	441	449	328	319	-	1.7.75
Norway	248	221	218	225	220	229	220	1.9.75
Ireland	178	190	203	207	190	238	-	-
Italy	3,863	4,053	4,579	4,558	3,681	4,006	3,810	-
Sweden	668	669	645	649	619	620	-	1.1.75
Japan	5,612	5,538	5,657	5,075	4,010	4,013	3,707	-
Netherlands	1,322	1,290	1,350	1,358	986	968	1,036	1.6.75
France*			8,627	7,916	6,373	6,431		1.7.73
Denmark	444	437	439	460	268	324	398	1.1.76
United States	34,820	34,230	35,220	33,670	26,750	27,220	27,670	-
United Kingdom	2,877	3,000	3,095	3,048	2,704	2,444	2,520	-

* Only outside built-up areas. And since 1.1.1975 inside built-up areas at night.

Comments on the statistical table shown as paragraph 9.

These figures must not be construed as the findings of an inquiry specially directed to the effects of the wearing of seat belts. They are based on general road accident statistics and consequently the effects of all the factors that have a bearing on the road accident situation of a country from year to year.

It is however reasonable to use them when looking into the question of seat-belt effectiveness. In this connection, it must be borne in mind that the number of accidents rises as the car population and traffic density increase. Furthermore, fewer deaths for car occupants are recorded when traffic density decreases, when driving speeds are lower (e.g. during the oil crisis in 1973 - 1974) and when a high proportion of drivers wore seat belts (1975 - 1976). The comparative figures for 1972 and 1975-1976 give some idea of the positive effect of mandatory wearing of seat belts in various countries. It must also be pointed out that this indication applies only to persons killed among car occupants and so does not allow for any change in the number of persons injured.

10. **Wearing percentages: in/outside built-up areas**

Country	1970	1971	1972	1973	1974	1975	1976	1977
Germany					Jan. 9/25 Nov. 13/29	22/34	32/47	
Denmark		13/36	10/30	19/30	16/32	13/34	83/89	
Finland						Beginning: 8/31 (10/28) end: 54/69 (50/66)	38/66 (36/62)	
Norway				13/35		29/56	27/59	
Netherlands		10/24	13/25	14/32	13/28	54/70	53/73	50/68
France°				26/56[x]	60	75	79	72

( ) = Passengers.
x = Before and after.
° = Only outside built-up areas.

For a better understanding of the figures about wearing percentages it should be stressed that the absolute number of people wearing seat belts is growing each year. Many new cars come into use each year, in which the use of seat belts is compulsory, and each year a lot of people obtain a driving licence.

It can be concluded therefore that although the wearing percentage is decreasing, in some countries the absolute number of people wearing seat belts is increasing.

11. Negative effects of the belts have not been ascertained or in such a slight measure that they can be neglected. A Swiss accident analysis-study showed a few technical defects of the belts. This study suggests that at most 0.65 per cent of the injuries were due to seat belt bearing and were not to be expected (to that degree) if no seat belts had been worn. With continuing improvements in the quality of seat belts and more suitably located anchorage points, this percentage should undoubtedly decline.

12. In France, Luxembourg, Germany, Sweden and Yugoslavia scientific research is undertaken into the effects of the seat belts at this stage. The fields covered by this research are not mentioned.

13. In Austria, Belgium, France, Germany and Switzerland the wearing of seat belts may influence to a greater or lesser degree the damages paid by the insurance companies.

In France, when the courts consider that the effects of the accident would have been less severe for the victim, if a seat belt was worn, they will take into account this fact when fixing the damages. In Germany, this point has also been dealt with by the courts, but there is not yet any ruling from the Supreme Court.

ANNEX I (PART A)

READING LIST OF AVAILABLE REPORTS, DOCUMENTS IN VARIOUS COUNTRIES MENTIONED IN ANSWERS TO THE QUESTIONNAIRE

Belgium:	Fonds d'études pour la sécurité routière : "Les ceintures de sécurité
Netherlands:	Lap belts and 3-point belts. A comparison of effectiveness, SWOV 1975, 1975 Voorburg, Netherlands. Practical and medical aspects of the use of car seat belts. Tentative views from recent research by the Institute for Road Safety Research SWOV, Voorburg, Netherlands.
Switzerland:	Interdiziplinäre Arbeitsgruppe für Unfallmechanik Universität und ETH Zurich: "Unfalluntersuchung Sicherheitsgurten*
Australia:	Diverse publicaties van het Ministerie van Transport, zoals: "Seat belt fitting and wearing in Australia". "Seat belt crash performance in Australia". "Australian approach to motor vehicle safety standards".
Japan:	Seat belt assemblies: "Performance requirements for seat belt assemblies".
United States:	"Motivating factors in use of restraint systems". Report DOT-HS_800_58 Sept. 71. "Broadcast media in Highway Safety: Systematic analysis of the effects of mass media communication on Highway Safety". Report DOT Dec. 71. "Evaluation of the effects of a seat belt education program on elementary school children in Loudoun County, Virginia'. Report DOT-HS Nov. 1972. "Sources and remedies for restraint system discomfort and inconvenience" Report DOT-HS-801...277, Nov. 1974. "Comfort and convenience analysis of advanced restraining systems". Report

* French translation also available.

	DOT-HS_801712, August 1975. "Effectiveness of safety belt warning and interlock systems'. Report DOT- HS-800-859, April 1973. "Seat belt use inducing system effectiveness". Report DOT-HS--801_50 April 1975. Safety belt interlock system usage survey". Report DOT-HS-801 -594, May 1957. "A statistical analysis of seat belt effectiveness in 1973-75 model cars involved in towaway crashes". Report DOT-HS-802-035, Sept. 1976. "Safety belt interlock system usage survey". Report DOT-HS-801 -957, August 1976. "Effectiveness of various safety belt warning systems". Report DOT-HS-801-953, July 1976. "Passive VS. Active Safety Belt Systems in Volkswagen rabbits: A comparison of owner's habits and attitudes". Report DOT-HS-801- 953, August 1976. "Analysis of comfort and convenience factors in improved restraint systems". DOT-NHTSA--Safety Research Laboratory Technical Report, Nov. 1976.
France:	ONSER Report (October 1974): Conséquences respectives sur Ia sécurité routière des mesures de port obligatoire de la ceinture et des limitations des vitesses prises en 1973. Report by the physiology and bio-mechanics laboratory of the PEUGEOT-RENAULT Association in consultation with the Orthopaedic Research Institute, GARCHES, and POISSY Hospital; report by Messrs. TARRIERE, HARTEMANN, GOT, PATEL at the STAPP Conference in 1977.
Sweden:	VOLVO Report (May 1977) by Mr. Hans NORIN on the statistical analysis of effects of accidents for belted and non-belted car occupants.

PART B

OTHER RELEVANT INFORMATION TO SOME ESSENTIAL ASPECTS OF PART A

Effectiveness of seat belts

The benefits of safety belts are based on two qualities. Seat belts prevent the so-called second collision of the occupants against interior parts of the car by restraining the human body at appropriate parts (thoracic cage and pelvis).

Secondly safety belts prevent ejection of occupants. It has been proved that the chance of fatal injury for ejected occupants is 4 to 5 times higher than those remaining in their cars. (Tourin 1960, Anderson 1974). Though ejection through opening doors happened less frequently from the time safety-door-locks became common features, ejection through front windows, side and rear windows and opening roofs have to be considered as well.

The proper use of safety belts is very important to reach the greatest benefits in collisions.

The proper positioning of the different straps over the appropriate parts of the body is important to prevent unnecessary injuries. If too much slack is available in the belt system, forces on the human body will increase considerably (Walz 1972).

Experimental crash tests carried out in laboratories have contributed enormously to improving safety belt design and better understanding of what happens during the very short moment (0.1 sec) of the actual collision.

Lately attention is focussed on the field of human tolerance data, which knowledge may be applied to improve crash safety devices like safety belts and minimise the chance of injury.

Data from real world accidents are needed to verify results from crash tests.

Results from such combined studies were published among others by ONSER and Volvo/Wayne State University. (ONSER 1975; Patrick and Anderson 1974).

Data on the real effectiveness of safety belts in collisions have to be evaluated from results of real world accident studies. After the proper analysing of all relevant data of such accident studies, conclusions may be drawn as to the effectiveness of safety belts by comparing groups of seat belt users with non-users.

One of the first important studies is the well known study from Volvo Bohlin 1968), stating considerable effectiveness figures for three-point belts. Results of many other studies confirmed these figures (Campbell e. a. 1974; Mela 1974; HUK 1975; SWOV 1974; Reinfurt e. a. 1976). The effectiveness of safety belts in reducing the chance of fatal injury for front seat occupants is calculated in most studies to be at least 50 per cent, especially for frontal collisions and rollovers. The reduction of less serious injuries was calculated to be somewhat less than for fatal injuries, but is still considerable.

Accident studies indicate that unrestrained rear seat passengers may cause injury to front seat occupants Huelke e. a. 1974). Therefore the use of seat belts for rear seat passengers will have positive effects on the injury chances for both rear seat passengers and front seat occupants.

In Switzerland, the Senior Consultant of the Clinique Ophtalmologique Universitaire de l'Hôpital de l'Ile, Berne, has provided the following most interesting figures, also pointing out that most of the persons injured were not wearing seat belts at the time of the accident and that those for 1976, in particular, were certainly not wearing belts:

	1974 (12 months)	**1975 (12 months)**	**1976 (12 months)**	**1977 (9 months)**
Eye, eyelid and face injuries	12	12	5	15
Eyelid and face injuries but not eye injuries	6	3	1	5
Total	18	15	6	20

These figures must be considered in the light of three important developments:

- On 1st January, 1976, wearing of seat belts was made compulsory.
- During the year 1977, monitoring by the police became looser and, on 2nd September, the Swiss Federal Court annulled the obligation to wear seat belts.

With regard to possible disadvantages of the use of safety belts during collisions it became clear statistically spoken there is no real problem (Walz e. a. 1976). Injuries do not occur due to safety belts but in spite of safety belts.

The fact that many countries made the use of safety belts compulsory was based of course on the statistically proven effectiveness of belts to considerably reduce the chances of fatal and serious injury. Cost-benefit studies pointed out that the compulsory use of already available 3-point safety belts was by far the most cost-effective measure to be taken on short account (Sharp 1973; ECE 1973).

Apart from crash safety devices like belts, other factors influence the outcome of collisions as well.

It is assumed that speed limits may have positive effects on traffic safety by decreasing both the incidents of accidents and the severity of accidents.

Physically speaking the amount of energy stored in a moving car is proportional to the square of the (driving) speed. In case of a collision most of this energy has to be destroyed during a very short moment. Therefore collision forces and decelerations are very much dependent on the collision speed, or rather the so-called V, the loss of speed during the collision phase. Lower V's mean much lower chances of fatality and injury for the occupants (Patrick and Boblin, 1974).

Separate and additional effects of the use of safety belts and the outcome of speed limits in France have been reported to be considerable (ONSEB 1974), confirming the above-mentioned effect. Here we come to the field of national accident statistics, proving effectiveness of safety belt laws and other traffic safety measures.

From several parts of Australia considerable drops in traffic deaths and injured were reported after the use of safety belts had become compulsory (Henderson e. a. 1973).

Other countries reported comparable results, depending on the rise in actual wearing rates of safety belts (SWOV 1977).

The Use of Seat Belts

In the Netherlands, for instance, according to the foregoing source, the increase of the use of seat belts by the occupants of passenger cars in the period 1971-1973 came to a standstill in 1974. This appears from the results of inquiries which were held in those years.

Consequently a smaller number of dead among the occupants of passenger cars in 1974 cannot be accounted for completely or partly by an increased use of seat belts. On the contrary the use of the seat belt grew considerably in 1975 because of the legal measure which came into effect on 1st June, 1975. There are strong indications that the said increase already began before 1st June. The somewhat lower percentages which were perceived in October 1975 may indicate that after June 1975 a slight decline in the use of seat belts took place. Because of the changes before and after June it is not possible to make an accurate calculation of the average wearing percentage for 1975. It seems a reasonable assumption that the average wearing percentage for 1975 amounted to 40-50 per cent. Compared with 1974 this is a considerable increase which undoubtedly has had a strong influence on the number of dead. The importance of this influence can be approximately calculated from the increase of the wearing percentages and the effectiveness of the seat belt. Since the wearing percentage outside built-up areas is always higher than in built-up areas, it is usual to make these calculations for both situations apart. However, for 1975 this was not possible seeing that the division of 1,005 dead in passenger cars (into outside and in built up areas) has not yet become available. Therefore a simple calculation was carried out, using the average wearing percentages. If we start from the following approaches:

- Average wearing percentage in 1974 approximately 15 per cent.
- Increase of average wearing percentage in 1975 compared with 1974 approximately 30 per cent.
- Percentage of all passengers killed on front seats approximately 80 per cent.
- Decrease of the risk of being killed in an accident by wearing seat belts: average of approximately 60 per cent (Edelman and Van Kampen, 1973).

The decrease of the number of dead among occupants of passenger cars in 1975 compared with 1974 (other things being equal) may be estimated at:

$$\frac{0.3 \times 0.8 \times 0.6}{1 - (0.15 \times 0.8 \times 0.6)} = 0.16 \text{ or } 16\ \%$$

Without an increase of the seat belt use the number of dead in passenger cars should amount to 1,005: (1 - 0.16) = 1,196 in 1975, which is almost 200 more than the actual number.

Technical developments, problems, and possibilities

Consideration: The equipping of new vehicles with audible or luminous warning systems for reminding occupants who have not put on the seat belts - of the need to do so.

A survey, conducted in the United States from August 1976 to April 1977 indicated that the light and buzzer systems on the newer model cars have had little impact on the level of safety belt usage. Starter interlocks and the continuous light-buzzer reminders in 1974 and some 1975 models apparently resulted in increased use of the lap/shoulder combination systems, the study indicated (25.2 per cent versus 18.5 per cent). These findings show in fact that these warning systems as such do not increase the wearing of seat belts to a level, comparable with the legal obligation to wear seat belts. Therefore these systems can only be seen as a complementary method to stimulate the seat belt wearing, as an extra to the legal obligation.

Standards towards uniformity

In 1970 in Geneva all standards were set up which seat belts have to meet. Further in July 1977 in Brussels standards were laid down for identification of the belt lock. There has to be a protruding red button which has to be pushed in order to disconnect the seat belt. These standards will become effective 18 months after 1st July, 1977.

Besides both in Brussels and Geneva a further improvement/adaptation of the rules is being constantly worked at, also in view of a further uniformity.

Psychological problems

The use of seat belts causes for a few people an (unjustified) fear that the belt will obstruct them in some situations to leave their car quickly, e.g. in case of fire or submerging.

These objections are more psychological than rational in the first place. The risk that accidents occur which involve that a car catches fire, can be neglected. In comparison with all accidents it also seldom happens that cars run into the water, even in the Netherlands with its many waterways. Apart from this eventuality it is of course not predictable whether a similar accident will occur.

Moreover an investigation in the Netherlands into “submerged cars” has proved that it is of the utmost importance to wear seat belts especially in these cases, thus reducing the risk of being injured or losing consciousness as much as possible. In that way one may make attempts to get out of the car.

Besides it should be mentioned that there exist technical systems or these are being developed, which see to it that the belt is disconnected automatically after a crash.

In other systems the seat belt can be disconnected from outside.

Information and propaganda campaigns

Also in a number of countries where the wearing of seat belts is not compulsory, large publicity campaigns have been conducted, e.g. in Great Britain and the United States.

In Great Britain each year campaigns have been conducted since 1968. In 1971 in North-East England (Tyne-Tees area) an intensive regional TV and poster campaign was conducted during six weeks, focussed on stimulating the use of seat belts.

This study makes it possible that valid conclusions may be drawn with regard to the impact of publicity campaigns on the use of seat belts. As you may know there were no other relevant activities, whereas no legal obligation was announced either.

The results of this campaign have been mentioned below.

Seat belt observations: Percentage of drivers wearing seat belts in cars with seat belts fitted in Tyne-Tees TV area and in control area.

	Pre-Campaign	**Mid-Campaign**	**Post-Campaign**
Tyne-Tees area	14	30	29
Control area	16	17	18

The researchers conclude that "it is a conclusive proof that publicity can affect behaviour in some road safety matters – in this case one of the most intractable"*.

In Great Britain this success led to a large national campaign in 1973 and also in the next years. The result of these campaigns – so reports Great Britain – is that the wearing percentage has increased from approximately 12% to 32%. As you may know there is still no wearing obligation in Great Britain.

Finally it should be mentioned that a number of countries after the introduction of the wearing obligation, also conducted national refresher campaigns in order to increase the wearing percentage still further respectively to stop a decrease (among others France, the Netherlands and Belgium did so).

The protection of children in cars

The protection of children in cars is a matter which cannot be solved by compulsory wearing only. In principle to children applies the same as to adults, viz, that as a matter of principle they should not be carried in cars without a safety device. If no safety device for children is present, the child should be carried at the back seat, considering this is less unsafe than at the front seat without any protection. Of course the best thing is to carry children in general at the back seat, while they are protected in a reliable way, particularly by means of special child's seats or child's belts.

For one or two motor-car types special child's seats are available, which can be fitted at the front seat in backward position. This is also an excellent way of protection.

In the Netherlands it is also permitted, if no adequate safety device is fitted at the back seat to carry children from the age of four at the front seat if a lap belt is used. This method is considered much safer than at the back seat without safety device.

* J.P. Morris, Road Safety Publicity, 1972. p. 70-71.

ANNEX II

LITERATURE, IN RELATION TO PART B

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